SPECIAL NOTE

At the time of printing of this revision, several aspects of the CVI software were incomplete. All customers receiving these early versions of software and this manual will be sent updated versions free of charge.
Selections in the menus which are in brackets are not yet functional. Also, some other functions are yet to be implemented, including RS232C port communications, multiple text fonts, and user definable brushes and textures.

Any suggestions for improvement, bugs encountered, or operational problems will be gratefully received, and will assist in improving the CVI. Please forward any suggestions to me at Fairlight Instruments, Sydney, or to your local distributer.

Best regards,

K Silverbrook

Kia Silverbrook
Project engineer.

PRESETS

00 DRAWING ON DIGITAL ☑ T L	**01** BASIC DRAWING: CLEAN SLATE ☑ T HSV	**02** TRANSLUCENT COLOUR ☑ T HSV	**03** INSTANT WIPE TO COLOUR HSV
04 SMALL BRUSH ☑ T HSV	**05** SPATTER ☑ T HSV	**06** COLOUR WIPE USING STENCIL HSV	**07** COPY ☑
08 UNDER-OVER K L	**09** UNDER-OVER: SLIDE COLOURIZE K L HSV	**10** STARS ON LIVE VIDEO: CLEAR STENCIL ☑ L T	**11** TEXTURE LINES ON LIVE VIDEO ☑ L T
12 RAYS ON LIVE VIDEO (PRESS DRAW) ☑ L T	**13** WIPE DOWN HSV T	**14** TEXTURE WIPE HSV T	**15** TINT LINE ☑ HSV T
16 NEGATIVE LINE ☑ T	**17** TEXTURE DRAWING: SPOTS ☑ HSV T	**18** TEXTURE DRAWING: WOODY ☑ HSV T	**19** MOSAIC L

QUICK SELECTOR

20 COLOURIZE: NEGATIVE HSV L	21 COLOURIZE: OIL SLICK HSV L	22 COLOURIZE: PAINTERLY HSV L	23 COLOURIZE: NEGATIVE RED HSV L
24 COLOURIZE: SUBTLE HSV L	25 COLOURIZE: SPECTRUM HSV L	26 COLOURIZE: CHROME HSV L	27 COLOURIZE: BLACK & WHITE HSV L
28 COLOURIZE: PASTEL HSV L	29 COLOURIZE: RED/GREEN NEGATIVE HSV L	30 COLOURIZE WIPE: CHROME ⊙	31 HORIZONTAL MIRROR L
32 VERTICAL MIRROR L	33 QUAD MIRROR L	34 SLOW SCAN ACROSS ⊙	35 SLOW SCAN DOWN ⊙
36 DRAWING RIPPLES ☑ L	37 DRAWING WITH 'GLUE' ☑ L	38 STROBE L R △t	39 SINGLE FREEZE F △t

PRESETS

40 SHATTER: DRAWN STENCIL
S L [R] △t

41 SLIDE SHATTER: DIAGONAL LINES
L ⊙

42 SLIDE SHATTER: CHECKERBOARD
L ⊙

43 CHOPPED UP: BARS
L ⊙

44 PARTIAL PIXELATE: GRID
L ⊙

45 COLOURIZE FLIP
L △t [HSV]

46 PARTIAL COLOURIZE: DRAWN STENCIL
L S [HSV]

47 PARTIAL COLOURIZE: SLIDING STENCIL
L S [HSV] [P]

48 PARTIAL COLOURIZE: CHECKERBOARD
L [HSV] ⊙

49 PARTIAL COLOURIZE: DIAGONALS
L [HSV] ⊙

50 HOLE: DRAWN STENCIL
☑ L

51 COLOUR DISINTEGRATE
[HSV]

52 DISINTEGRATE: STILL TO VIDEO
L

53 TEXTURE ON VIDEO: BRICKS
L ⊙

54 TEXTURE ON VIDEO: BARS
L ⊙

55 IMAGE OVER COLOUR WIPE
K L [HSV]

56 IMAGE OVER TEXTURE WIPE
K L [HSV]

57 TEXTURE OVER IMAGE
K L

58 PUSH TO FREEZE
[F] L △t K

59 TRAIL
L K

QUICK SELECTOR

60 TRAIL: STROBE L [R] △t K	**61** TRAIL: SLIDE L K	**62** TRAIL: SLIDE, ZOOM L △t K	**63** SLIDE △t
64 OVERLAP MIRROR K	**65** OVERLAP MIRROR: TRAIL AND STROBE L △t K	**66** OVERLAP MIRROR: TRAIL AND SLIDE L K	**67** VERTICAL MIRROR: TRAIL AND STROBE L △t K
68 OVERLAP MIRROR: NEGATIVE COLOURIZE L K	**69** SHADOW [P] L K	**70** COLOURIZED SHADOW [P] L [HSV] K	**71** CATCH-UP △t L K
72 CATCH-UP COLOURIZE △t L [HSV] K	**73** GHOST: SINGLE FREEZE [F] L	**74** GHOST: STROBE, COLOURIZE L △t [HSV]	**75** SOFT PIXELS L
76 UNDER/OVER: STENCIL DRAWING ☑ K	**77** UNDER/OVER: TRAIL K [R]	**78** UNDER/OVER: SLIDE [P] K	**79** FLIP KEY COLOURIZE L [HSV] [R] △t K

PRESETS QUICK SELECTOR

80 KEY OVER STILL
K L

81 MUSIC STROBE

△t

82 MUSIC TRAIL

K

83 MUSIC COLOUR TUNNEL UNDER LIVE VIDEO

L K△t

84 INTERNAL KEY: VIDEO 1 AND 2
2 L ☑

85 CHROMA KEY: VIDEO 1 OVER 2
2 L K

86 CHROMA KEY: VIDEO 2 OVER 1
2 L K

87 CHROMA KEY: 1 OVER 2, COLOURIZED
2 L K HSV

88 CHROMA KEY: 1 OVER 2, MOSAIC
2 L K

89 CHROMA KEY: 1 OVER 2, STROBE
2 L △t K

90 DOUBLE EXPOSURE
2 L

91 WIPE ACROSS: VIDEO 1 TO 2
2 L

92 WIPE DOWN: VIDEO 2 TO 1
2 L

93 DISINTEGRATE: VIDEO 1 TO 2
2 L

94 COLOUR TUNNEL
HSV ⊙ △t

95 VIDEO 2 THROUGH
2 L

96 VIDEO 1 THROUGH
L

97 COLOUR BARS

98 CHROMA KEY SETUP: VIDEO 2
2 HSV L

99 CHROMA KEY SETUP: VIDEO 1
L

THE FAIRLIGHT CVI

COMPUTER VIDEO INSTRUMENT

OPERATION MANUAL

PRELIMINARY revision 3

September, 1984

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CONTENTS

The Fairlight CVI (Computer Video Instrument) is an interactive system combining video paint facilities with live video effects. These two main aspects are inter-related, so that you can combine drawn and live video images in a multitude of ways; using painted images as backgrounds, foregrounds, or both, capturing live images and combining them for a video photo-montage, drawing directly on live video images, and so on.

The CVI has been designed to embody a high degree of flexibility, allowing users to develop their own style of use. Initially, the operational system may seem to be quite complex, but we hope that with a little use, you will find it logical and easy to operate. It has been designed to offer access to the facilities at different levels of experience with the unit:

1) The front panel controls are available immediately for basic effects such as freeze, colourizing, zooms, etc.
2) The 100 factory preset effects are available simply by looking up the desired effect in the front of this manual, and pressing the PRESET button followed by a two digit number.
3) When confidence has been gained, the menus may be used, offering much greater flexibility. At this stage, the factory presets can be over-ridden with your own favoured effects.
4) Once familiarity with the system is gained, and capabilities of the CVI are understood, the SEQUENCER functions can be used for Live shows, repeatable processing of video-taped images, and to allow correctable, or editable painting.
5) The more adventurous may wish to connect the CVI to a personal computer, and write their own functions, using any of the CVI's facilities, available via the RS232C port.
6) The cascade facility, allowing two or more CVIs to be connected, allows a whole range of multi-plane effects, and others not possible with a single CVI, to be used.

This manual is divided into several sections. Some, such as this one, should be read before first trying to use the CVI. Others are intended to be 'worked through' to gain a knowledge of what the CVI offers, and others are intended as reference, to be read as needed.

SECTION A. This is the 'PRESETS QUICK SELECTOR' and is at the front of this manual so that it is easy to find in rushed circumstances. It consists of a representative photograph of each of the 100 PRESETS that the CVI will contain when first turned on. There are also a series of symbols, signifying some of the basic characteristics of the preset. Each photo is numbered, and when the desired preset is determined, it can be selected by pressing the PRESET button, followed by the two digits of the preset number. Further information about each preset is contained in the PRESETS section at the end of this manual.

SECTION B. The INTRODUCTION contains general information about the CVI and how to use it. Many people skip introductions, but there are aspects of the CVI which are unusual, and it is the intention of this introductory section to give an overall view of these. So, read on!

SECTION C. The FRONT PANEL CONTROLS section describes the operation of the user controls. As such, it should be read through, preferably with a CVI handy to try them out.

SECTION D. This section, called 'CONNECTING THE CVI' should be thoroughly read before first plugging the unit in. It covers POWER, VIDEO, and special DIGITAL connections, in a variety of configurations. These range from a basic home video arrangement, to live performance, to post-production situations.

SECTION E. The PAINT FACILITIES section gives a general description, with detailed examples, of how to use the CVI's digital video painting facilities. It is intended to be read through, preferably with a CVI at hand, to try out the points covered as you go. This section also has relevance to live video effects, as it describes the creation of backgrounds, and the drawing of STENCILS (mattes, or keys).

SECTION F. How to select and control live video effects is covered in the VIDEO FACILITIES section. As with Paint facilities, this section is best read in conjunction with a CVI to try out what is written. The reading of this section is essential to gain an understanding of the CVI's effects system, as most effects are combinations of various functions in the VIDEO MENUS.

SECTION G. The PAINT MENUS section gives a detailed description of each of the menus in the PAINT/DRAW category. To get the most from your CVI this section should be read, and tried, after the PAINT FACILITIES section is read. This section is intended both as reference for the details of a particular selection, and to be read through so that you know what digital painting tools are available.

SECTION H. Like the paint menus section, VIDEO MENUS contains a detailed description of all the menus in the live VIDEO category. Likewise, though this is a reference section, a better understanding can be achieved by working through it.

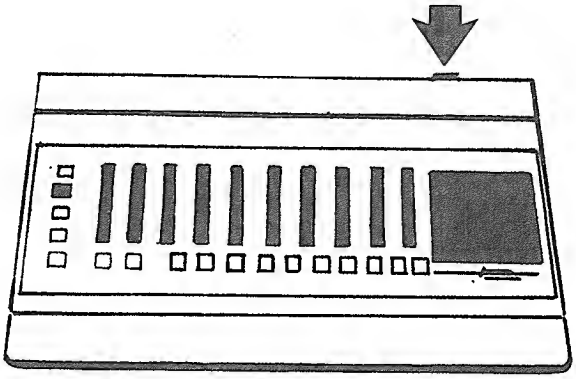
SECTION I. The APPENDICES contain a miscellany of information to be used as required.

SECTION J. This section contains information on each of the 100 initial PRESETS. It is intended to be used in conjunction with the PRESETS QUICK SELECTOR (section A.), and is at the end of this manual to make it easy to find in quick reference situations. This section is intended for reference, to be used as required.

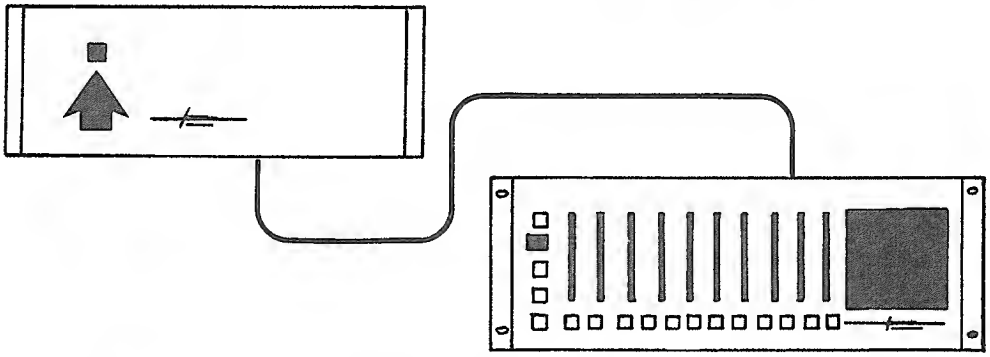
TURNING IT ON

If this is the first time your CVI has been used, and it is not yet connected, then you should refer to the section of this manul called 'CONNECTING THE CVI'. Once connected, it may be turned on. This is one of the simpler procedures in the CVI, and consists of turning on the power switch.

CONSOLE VERSION CVI. On the console version the power switch is located on the back of the unit, to the far right, just above the power cord.



RACK MOUNT VERSION CVI. On the rack mount CVI, the power switch is located on the front of the Electronics unit, which may be installed in a different room than the control console.



When the power is turned on the control console will light up. The PRESET NUMBER indicator will read **00**, and lights in the switches and sliders will come on. The image on the screen will be the Fairlight logo overlayed on the incoming video signal (or black, if there is no signal input). See the photo for PRESET 00 in the PRESETS QUICK SELECTOR.

The CVI has power-down memory of PRESETS and SEQUENCER information. These will be as they were left when the power was turned off, with the exception of PRESET 00, which will always turn on in the 'logo' condition.

The CVI does not have power-down memory of picture information. If you wish to keep a still image for later work, the CVI may be left on (power consumption is only 40 watts), or the image may be saved digitally onto video-tape or video-cassette (see the SAVE AND RECALL menu).

MENUS - What are they?

'Menus' are the screens full of words and symbols, in **white** lettering on a **blue** background, that appear when the 'MENU' button is pressed.

The menus are a means of making selections within the system. They take the place of a large array of switches, buttons, knobs, and paraphenalia that would otherwise be necessary to control a machine with the scope of the CVI.

They are divided into two broad, and somewhat inter-related categories: PAINT menus and VIDEO menus. The PAINT menus are used primarily to select options in the generation and painting of still images, and stencils. The VIDEO menus are primarily intended for the control of live video processes. There is a considerable degree of overlap, as live and still images can be combined in a large number of ways, and there are a number of functions which are equally useful for both categories.

> The menus are initially entered by pressing the MENU BUTTON. This will return the last menu that was displayed back to the screen. The menus are the blue and white "pages" that appear on the screen. For purposes of printing, they appear in black and white in this manual.

Most menus feature a descending row of numbers that relate directly to the adjacent specific items in that menu.

There are 2 methods of selecting items within the menus. These are:

1) The PUSH BUTTONS

Choose any item in the menu by pressing the respective numbered button.
A white square will appear around the number of the item that you have selected in the menu.

> NOTE: The function of the numeric buttons changes when an image other than a menu is on the screen.

2) The PEN and GRAPHICS PAD

Apply firm pressure with pen on the pad and notice the cursor appear on the menu. With the pen, move the cursor to the number of the item or menu that you wish to select. LIFT THE PEN FROM THE PAD, with the cursor on the relevant number: a white square will appear around that number.

At the top of every menu is a long horizontal box with the name of the menu.

To the right of the name are three symbols. When these symbols are selected by the pen, or their equivalent buttons pushed, the following will occur:

Exits menu mode, and returns to the image. Equivalent to the STOP button while in menu mode.

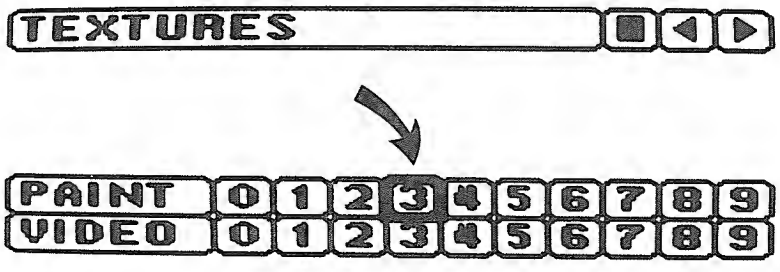
Returns to the previously displayed menu. Equivalent to the DRAW button while in menu mode.

Goes to the next menu. Equivalent to pressing DRAW LOCK while in menu mode.

Most menus also feature a quick selection bar at the bottom of the page.

For those who have familarized themselves with the CVI system, this 'quick selection bar' enables you to gain instant access to any other menu. Simply position the cursor over the number of the required menu (either PAINT 0-9 or VIDEO 0-9) and lift the pen. If you can't remember the required number, position the cursor over either PAINT or VIDEO (depending on whether the required menu was a paint or real-time function), and lift the pen. The PAINT MENUS or VIDEO MENUS selections will be displayed, which list the menus by name in both categories.

The number of the currently displayed menu is high-lighted by a thick wall box.



PRESETS: an explanation

One of the notable things about this manual is that both the first five pages and the last fifty are devoted to PRESETS. What are these beasts?

Well, a preset is somewhat akin to a 'snapshot' of the CVI at a particular instant. A preset contains information about the position of the ten SLIDER controls, the sixteen PUSH BUTTONS, and most of the MENUS. When the CVI is first turned on, the 100 presets (00 to 99) contain the control information corresponding to the CVI's condition that produced the photographs at the front of this manual. This same condition can be reproduced simply by selecting the appropriate preset.

Note that a preset does not contain any pictorial information. The resultant screen image will be the same process used to generate the photo in the PRESETS QUICK SELECTOR section, but applied to whatever video image is presented to the CVI's inputs.

The PRESETS have several functions:

1) To make it very **easy** to achieve advanced effects which otherwise would require a series of selections.
2) To allow changing of effects **without** having to select items in the MENUS. This is essential to live performance, as the sudden appearance of a blue menu image would generally be an undesirable interruption.
3) To facilitate **fast** and **accurate** control of the CVI in demanding situations, and even situations which are not so demanding.
4) To allow the **recording** of an effect that you may like and wish to repeat at some later stage.

This last point brings us to the next feature of presets: although the presets start out containing 100 selected effects, these presets can be changed or replaced with your own creations at any time (see PRESETS CONTROL in VIDEO MENUS for details). The CVI will then remember your effect until instructed otherwise. You can re-create the effect simply by selecting the preset that you stored it in.

The CVI will even remember your effect if you turn the power off. So you can create an effect, store it as a preset, and come back a month later - it will still be there, if you haven't changed it again in the meantime. The original preset, the one described in the PRESETS and PRESETS QUICK SELECTOR sections of this manual, can be regained at any time (again, see PRESETS CONTROL menu) However, your preset will be lost, unless you either copy your preset to a different preset number, or save it to video-tape/video-cassette (see SAVE AND RECALL menu in VIDEO MENUS)

It is also easy to create a series of presets that follow on from one-another. This is useful in live shows and post-production work, where an unco-ordinated transition from one situation to another may be undesirable (see PROGRAM MODE in PRESETS CONTROL menu).

The SEQUENCER

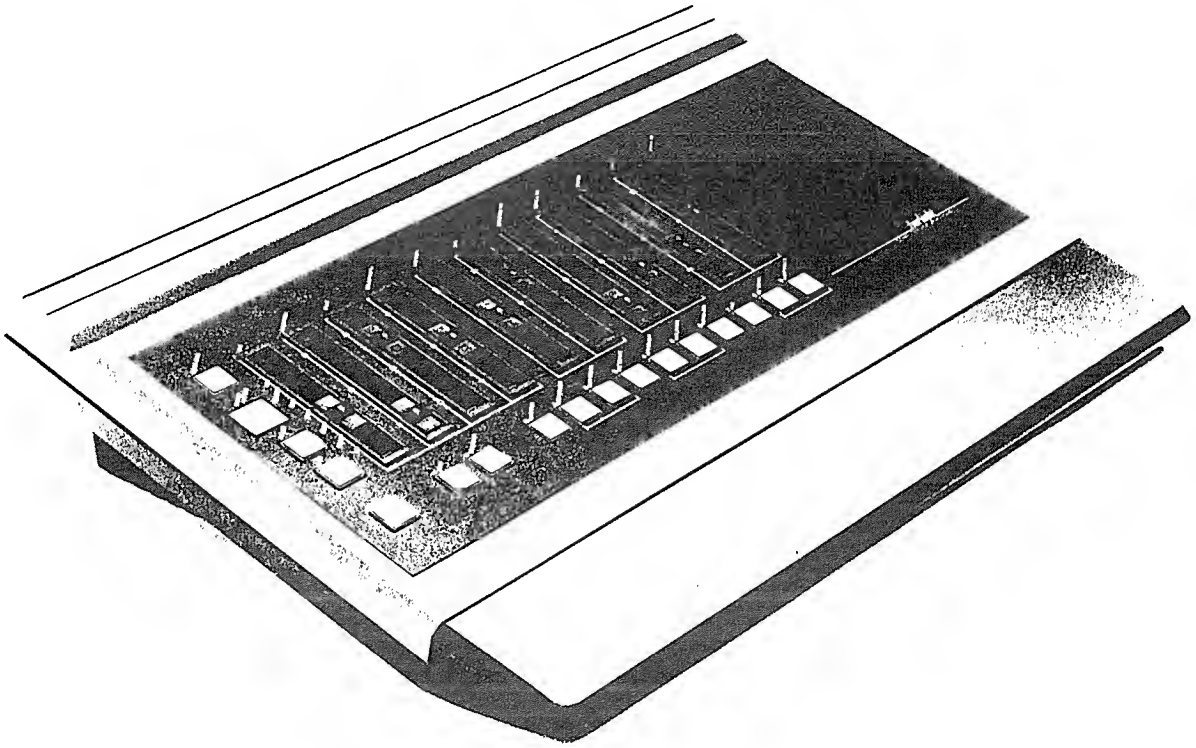
The CVI's sequencer records a history of actions, and allows accurate repetition of these. It also allows 'editing' or modification of this history, permitting you to hone a 'sequence' of effects to perfection. The sequencer also records a history of any 'painting' motions made. Thus, if some uncorrectable mistake is made in the process of 'painting' an image, the sequence can be replayed up till the point that the mistake was made, and the painting continued from there. This recording of a painting in progress is also useful as a form of animation.

The sequencer does not record actual images, but rather the process of making the image. If the image is a modification of an image aquired via the video input, this original image will have to be duplicated for indentical results. The first action in a sequence should be the clearing of the screen in some way (usually a COLOUR WIPE, or RECALL of a digital image from video-tape: see COLOUR WIPES menu and SAVE AND RECALL menu). If this is not done, replaying the sequence will result in the building of the new image on top of the old.

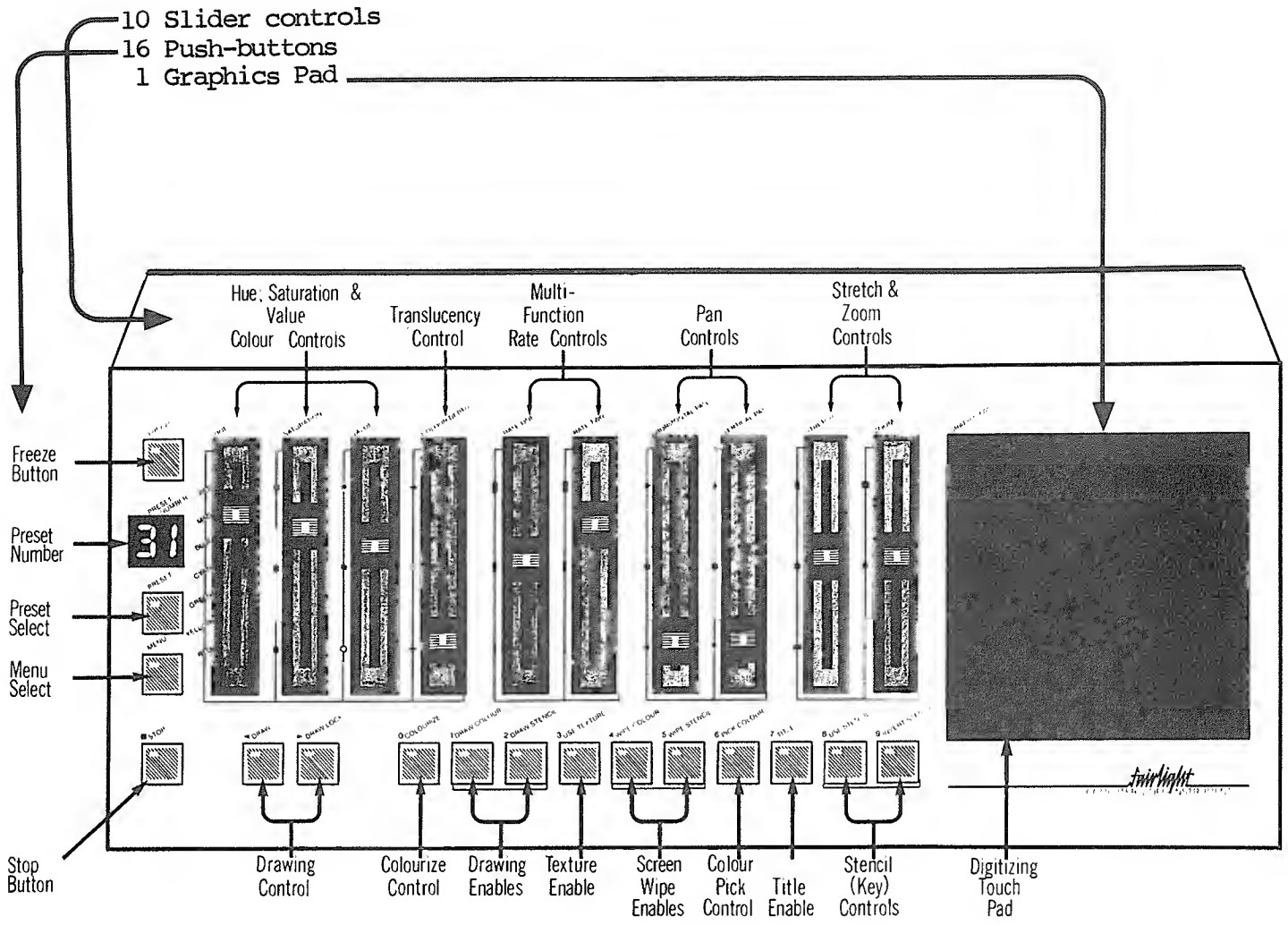
When a sequence is recorded, the CVI will remember it until it is changed, or a new sequence is recorded. The CVI will even remember it after the power is switched off. If, however, you desire to record a new sequence, but still be able to regain the old one later, the old sequence should be digitally saved onto video-tape/cassette using the SAVE AND RECALL menu.

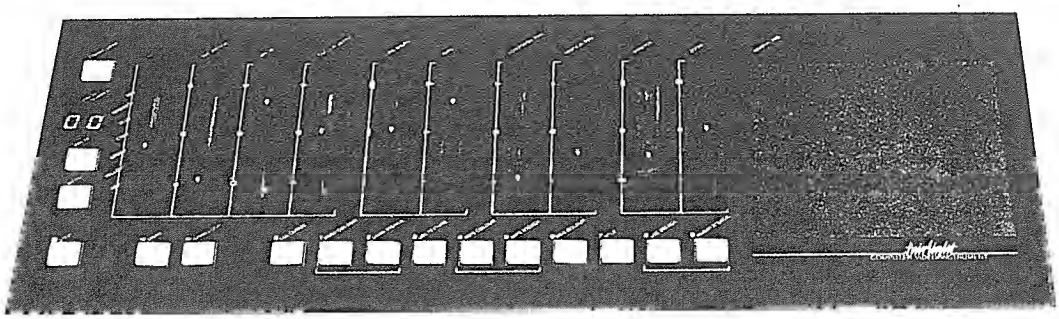
The CVI will not record a sequence unless you tell it to do so. Full details on how to operate the CVI's sequencer are contained in the SEQUENCER description in the VIDEO MENUS section.

FRONT PANEL CONTROLS

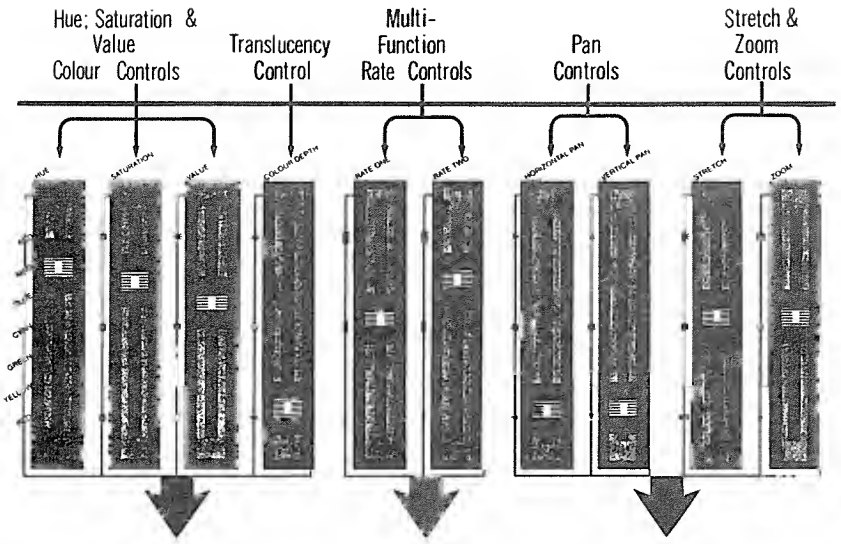


The front panel controls consist of:





THE SLIDER CONTROLS



The slider controls form three groups:

1) **COLOUR CONTROL:** Allows real-time control of colour, for both colour modification (**colourizing**) of live images, and painting. The colour selection method follows the Hue, Saturation, Value (H.S.V.) colour model. This colour model was selected as it is a system preferred by artists for easy colour selection.

   The four controls in this group are:

   1) **HUE:** This selects the actual 'colour' from the spectrum. The slider is marked: RED YELLOW GREEN CYAN BLUE MAGENTA RED, being a full colour circle. It is a continuous scale, so positioning the slider between, say, RED and YELLOW will yield ORANGE.
   2) **SATURATION:** The saturation of a colour is its 'purity'. For instance, high saturation RED is a bright red, decreasing saturation goes through various shades of pink, until at minimum saturation, the result is WHITE. This control may be regarded as adding 'Whiteness' as the control is decreased.
   3) **VALUE:** This control affects the brightness of the colour. Full brightness occurs when the slider is at the top of its travel, and moving the control down will darken the colour, until at the bottom it will be BLACK. With value at black, Hue and Saturation controls will have no effect, as you cannot perceive colour in total darkness.
   4) **COLOUR DEPTH:** This controls the degree in which the H.S.V. colour interacts with colour already on the screen. In simple terms it is like a translucency control, or 'thickness' of colour, but its actual effect depends on the selection made in the COLOUR TYPE menu (or COLOURIZE TYPE menu for colourizing).

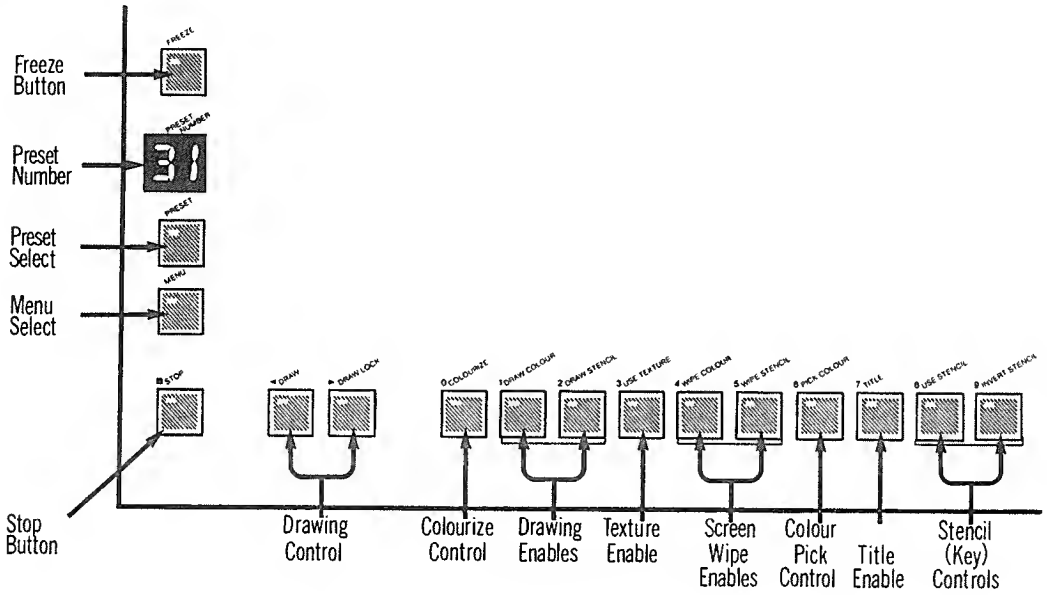
   For a more detailed explanation of how to select, mix, and match colours, see 'COLOUR' in the PAINT FACILITIES section.

2) **TIMING CONTROL:** These two sliders control the rate at which events occur in the CVI.
   1) **RATE ONE:** This controls the rate of glides (SCREEN CONTROL menu) and of random or 'stochastic' functions. (COLOUR CONTROL and COLOURIZE CONTROL menus).
   2) **RATE TWO:** This control determines the rate of image 'grabbing', controlled by the FREEZE CONTROL menu.

3) **MOVEMENT CONTROL:** These four sliders control the movement of the **digital** image on the screen. Their functions are affected by the GLIDE, SLIDE, and PAN:PEN selections in the SCREEN CONTROL menu.
   1) **HORIZONTAL PAN:** Moves image horizontally.
   2) **VERTICAL PAN:** Moves image vertically.
   3) **STRETCH:** This control affects the aspect ratio (proportion of vertical size to horizontal size) of the Pixels. (A pixel is a 'picture element', which is the smallest unit of colour that the image is composed of.) On a **still** image this control will stretch the picture, with a normal image occurring when the control is at centre. Up from centre gives a vertical stretch. Down from centre gives a horizontal stretch. On a **live** image, this control will control the **Mosaic** (Pixelation) effect.
   4) **ZOOM:** This control expands the pixels. On a **still** image this control **Zooms** the picture, giving a 'close-up' effect. Changing this control with a **live** digital image will result in the **Mosaic** effect. The normal position for this control is at the bottom of its travel.

The push-buttons allow immediate control of a number of functions: There are buttons for starting a process, selecting presets, entering the menus system, and various other functions. All of the buttons feature a light, indicating the current status (on or off) of the function they control.

Ten of the buttons have the numerals 0 to 9 printed above them. These buttons change to their numeric function when the MENUS are displayed, or when PRESETS are being selected.



0) **COLOURIZE:** push on/push off.

Will re-colour the whole digital image in the colourize type selected in the COLOURIZE TYPE menu. Colourizing is alterable by the Hue, Saturation, Value, and Colour Depth controls.

* See COLOURIZE TYPE and COLOURIZE CONTROL menus.

This button doubles as numeric 0 when in MENU mode or PRESET select mode.

1) **DRAW COLOUR:** push on/push off.

Enables you to use the pen and graphics pad to draw "on screen". Must be used in conjunction with DRAW or DRAW LOCK buttons.

This button doubles as numeric 1 when in MENU mode or PRESET select mode.

2) **DRAW STENCIL:** push on/push off.
Enables a stencil (matte or key) to be drawn on the stencil plane, with pen and graphics pad, provided that the DRAW or DRAW LOCK buttons are also on.

This button doubles as numeric 2 when in MENU mode or PRESET select mode.

3) **USE TEXTURE:** push on/push off.
Enables the texture selected to be used for drawing and some colour wipes.

* See TEXTURE menu.

This button doubles as numeric 3 when in MENU mode or PRESET select mode.

4) **WIPE COLOUR:** Push once to wipe.
Activates prior COLOUR WIPE selection .

* See COLOUR WIPES menu.

This button doubles as numeric 4 when in MENU mode or PRESET select mode.

5) **WIPE STENCIL:** Push once to wipe.
Activates prior STENCIL WIPE selection.

* See STENCIL WIPES menu.

This button doubles as numeric 5 when in MENU mode or PRESET select mode.

6) **PICK COLOUR:** Push once to pick colour.
With pen and graphics pad move cursor to desired colour on screen - push button once to "pick" that colour. You may then draw, in that colour. Changing either the HUE, SATURATION or VALUE controls will revert colour control to the selection in the COLOUR CONTROL menu (usually H.S.V. control). PICK COLOUR may be pressed as often as desired, each time the colour acquired from the screen will be used until further change.

This button doubles as numeric 6 when in MENU mode or PRESET select mode.

7) **TITLE:** Push once to title.
Enables you to display the title that you edited on the Title Edit Menu.

* See TITLE EDIT menu.

This button doubles as numeric 7 when in MENU mode or PRESET select mode.

8) **USE STENCIL:** Push on/push off.
Enables you to activate on screen whatever stencil is on the stencil plane.

* See STENCIL CONTROL menu.

This button doubles as numeric 8 when in MENU mode or PRESET select mode.

9) **INVERT STENCIL:** Push once to invert.
Enables you to "flip" the stencil, so that areas where the stencil was OFF become ON, and vise versa. Thus protected areas, and areas with differing display selections in the STENCIL CONTROL menu, will be exchanged.

* See STENCIL CONTROL menu.

This button doubles as numeric 9 when in MENU mode or PRESET select mode.

10) **DRAW:** Hold down to draw.
This button enables the drawing of lines and shapes on the screen. Use in conjunction with the DRAW LOCK button.

* See PAINT METHOD menu.

This button doubles as a **previous** MENU or PRESET selector when in MENU mode or PRESET select mode.

11) **DRAW LOCK:** Push to lock DRAW on, push again to unlock.
This button enables the drawing of lines and shapes on the screen. Use in conjunction with the DRAW button.

* See PAINT METHOD menu.

This button doubles as a **next** menu or preset selector when in MENU mode or PRESET select mode.

12) **STOP:** Push once to stop process.
This button stops a special process from happening, and returns the CVI to a neutral condition. Included in the processes stopped by STOP are: Sequences, Colour Wipes, Stencil Wipes, Setup selections, and some Paint Methods. In menu mode it will end the menu selection process, and return you to the colour image.

13) **MENU:** Push to enter MENU mode.
When pushed, the last menu that was displayed will re-appear on the screen.

* See the MENUS section in this manual.

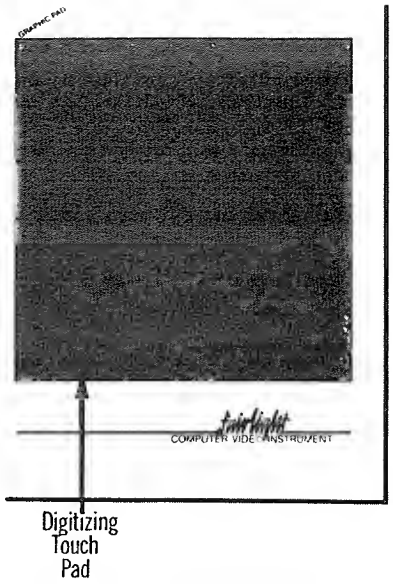
14) **PRESET:** Push to enter PRESET selection mode.
This button enables the selection of PRESETS. If you want to select a particular PRESET, press the PRESET button, followed by a two digit number (00 to 99). If the required preset is numbered between 0 and 9, you may either press 0 then the required digit, or press the digit followed by the STOP button. If you require the next preset, press PRESET then the 'next' (DRAW LOCK) button. Likewise for the previous preset: press PRESET followed by the 'previous' (DRAW) button. This function remains constant, even when MENUS are displayed.

15) **FREEZE:** Push on, Push off.
This button controls the FREEZE function in combination with the FREEZE CONTROL menu. If the light is on, the image will be frozen, if off, the image will respond to the Freeze Control selection.

* See the FREEZE CONTROL and DISPLAY CONTROL Menus.

This button will have no effect when the MENUS are displayed.

THE GRAPHICS PAD



This is the "heart" of the CVI system.

The inbuilt Graphics pad is a touch sensitive pad which detects the position of a stylus (supplied 'pen') or fingernail on the surface. This position is used by the CVI for several functions: It allows easy selection of options in the menus, and allows the drawing of images and 'stencils' on the screen.

Before commencing to draw or paint an image you should make the appropriate selections in the paint menus, or select a PRESET which has the required facilities stored.

A cursor will appear on screen, in a position corresponding to the pen's position on the graphics pad. The form of this cursor varies with different functions.
For painting, the cursor will show the COLOUR, BRUSH SHAPE, and COLOUR TYPE currently selected. When the colour and position of cursor are determined, press either 'DRAW', or 'DRAW LOCK' and move the pen on the pad to draw images. See the PAINT FACILITIES section of this manual for details of painting options.

Drawing will occur when pen is held firmly on the graphic pad. When you lift pressure the line or brush stroke you are doing will cease. Apply firm pressure and there is less chance of errors, in either drawing mode or menu mode.

NOTE: Do not use a pen or ballpoint pen with ink on the graphic pad - indelible staining may occur. Also, do not use any object with a sharp point: the pad surface may be scratched.

CONNECTING THE CVI

The CVI has been designed to be compatible with a wide range of video configurations, from home video equipment to low band U-matic to broadcast compatible high-band situations. It can be used for post-production effects generation, live effects during filming, fully live operation at concerts, or for still image generation and modification.

To accomodate the wide range of applications there are a large number of connectors on the back of the CVI. For simpler applications, most of these can be ignored. Select the configuration which most suits your requirements from the connection diagrams in this section.

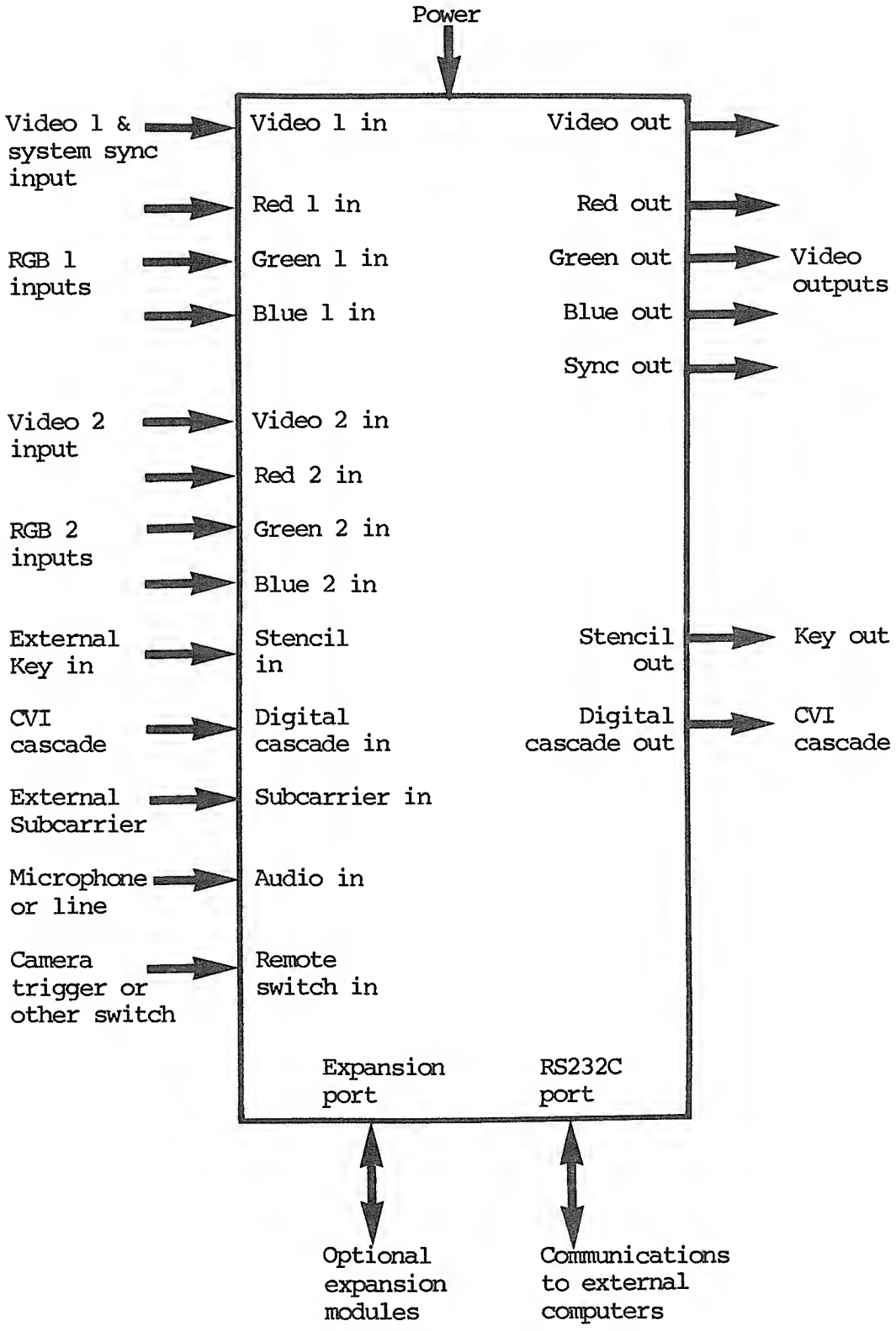
The CVI synchronizes to Video 1 input, which should either be a normal composite video signal, or colour black. The CVI does not act as a time-base corrector, but neither does it require one. The output will be in sync with the video 1 input, and the input to video 2 must be externally gen-locked where used.

NOTE

The Internal PAL/NTSC coder is **not** Broadcast rated.
To use the CVI in a broadcast situation,
an external Coder and SPG must be used,
in combination with the CVI's RGB outputs.

A suggested configuration is given in this section.

CVI EXTERNAL CONNECTIONS

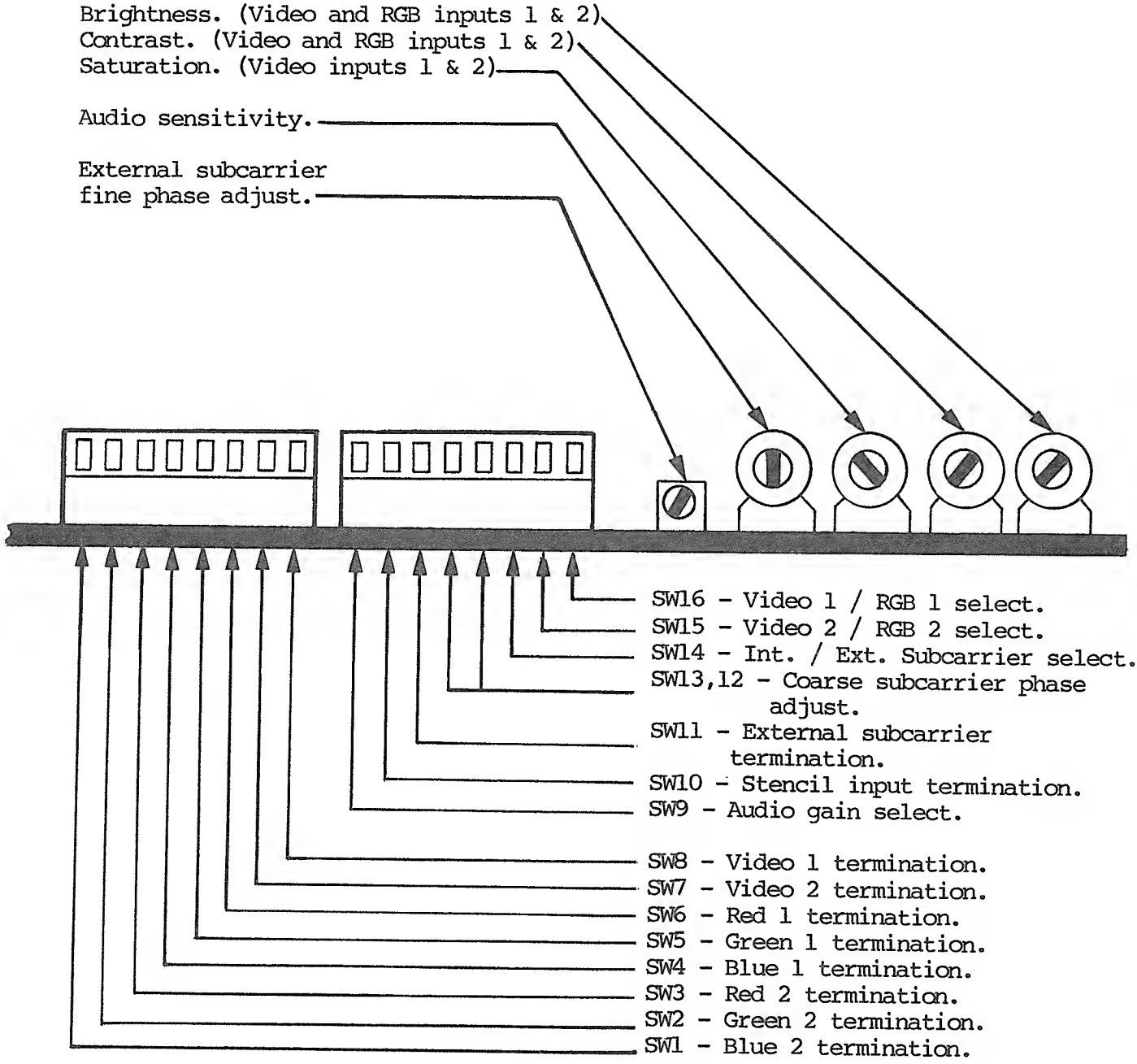


OPTIONS AND AJUSTMENTS

There are a number of option switches and adjustments available. In the Rack mount model (CVI-R) these can be accessed by unclipping the front panel of the electronics unit (turn the 4 screws on the front a quarter turn anti-clockwise). The adjustments are along the edge of the Analog board.

When the CVI leaves the factory, it will be set for composite video on Video 1 and Video 2 inputs. Change switches 15 and/or 16 to use RGB inputs.
All inputs will initially have 75 Ohm termination selected: It is not necessary to use termination plugs. If you wish to loop-through on any input, turn off the appropriate termination switch.

ANALOG BOARD OPTIONS AND ADJUSTMENTS



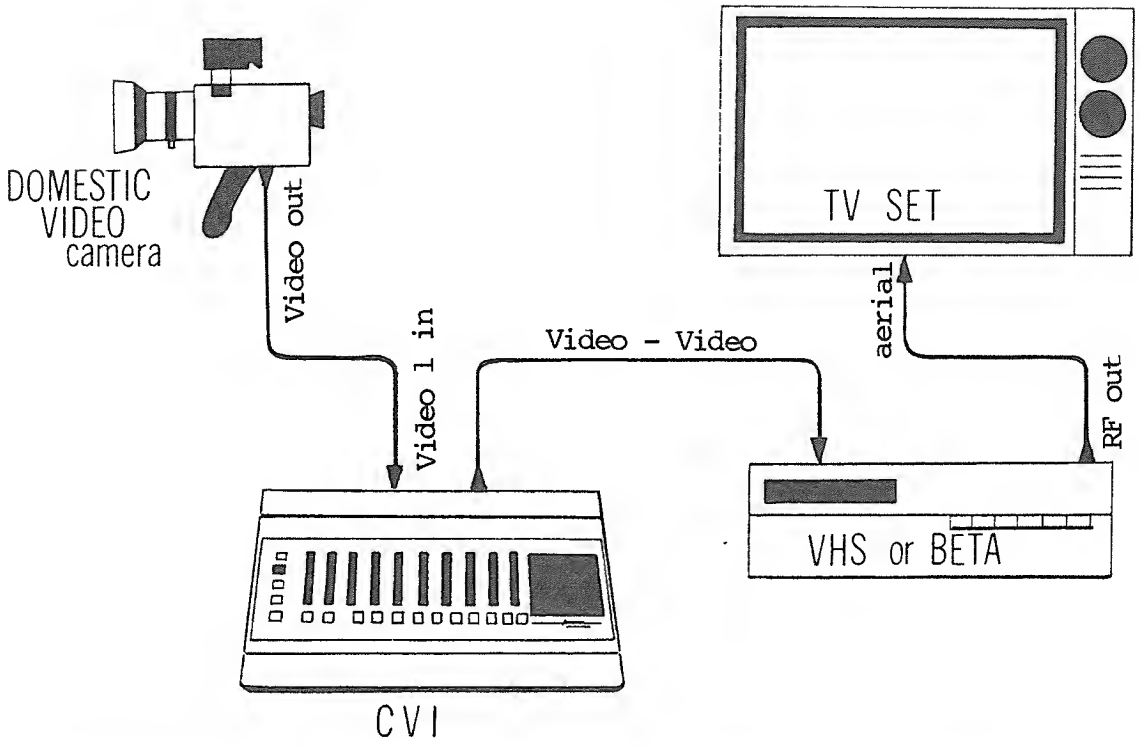
OPTION SWITCHES

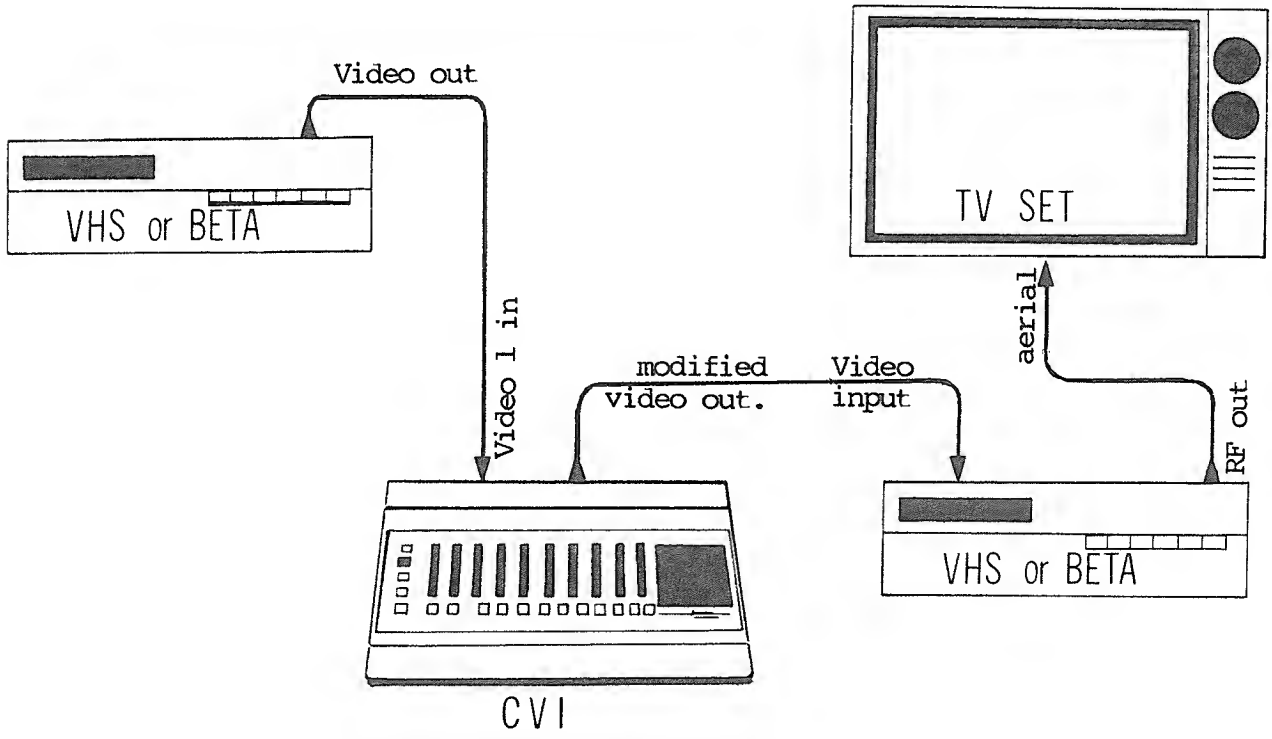
These option switches appear on the edge of the Analog card in the CVI's main chassis, and the correct selections should be made when connecting the CVI.

SWITCH	FUNCTION
16	Selects Composite video or RGB inputs for Video 1. (Composite video when ON)
15	Selects Composite video or RGB inputs for Video 2. (Composite video when ON)
14	Selects Internal or External subcarrier. (Internal subcarrier when ON)
13 12	Selects external subcarrier coarse phase. (13 off, 12 off - 0 degrees 13 on , 12 off - 0 degrees 13 off, 12 on - 120 degrees 13 on , 12 on - 240 degrees)
11	Selects 75 Ohm termination for External Subcarrier input when ON.
10	Selects 75 Ohm termination for Stencil input when ON.
9	Selects Audio input gain. (Microphone gain when OFF, Line gain when ON)
8	Selects 75 Ohm termination for Video 1 input when ON.
7	Selects 75 Ohm termination for Video 2 input when ON.
6	Selects 75 Ohm termination for Red 1 input when ON.
5	Selects 75 Ohm termination for Green 1 input when ON.
4	Selects 75 Ohm termination for Blue 1 input when ON.
3	Selects 75 Ohm termination for Red 2 input when ON.
2	Selects 75 Ohm termination for Green 2 input when ON.
1	Selects 75 Ohm termination for Blue 2 input when ON.

CONFIGURATION DIAGRAMS

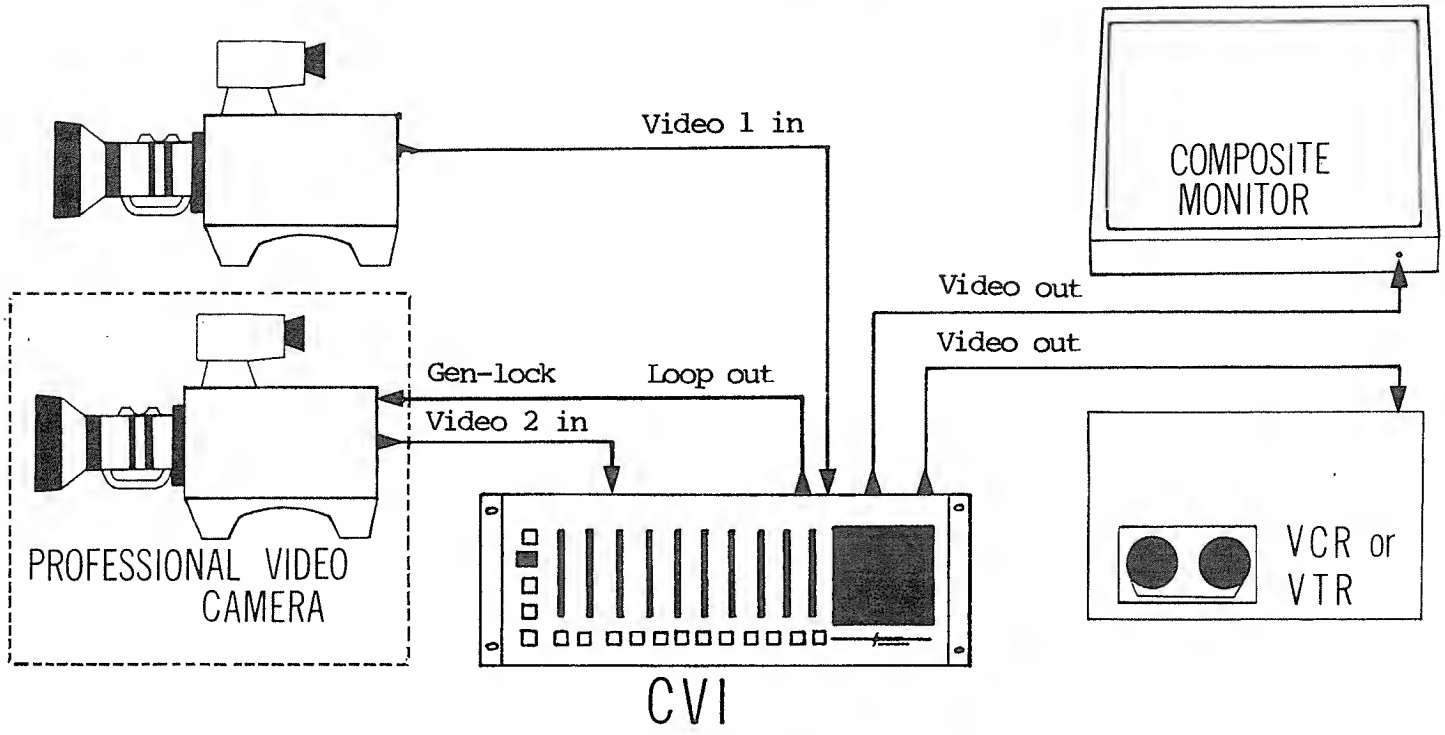
USE WITH DOMESTIC VIDEO EQUIPMENT



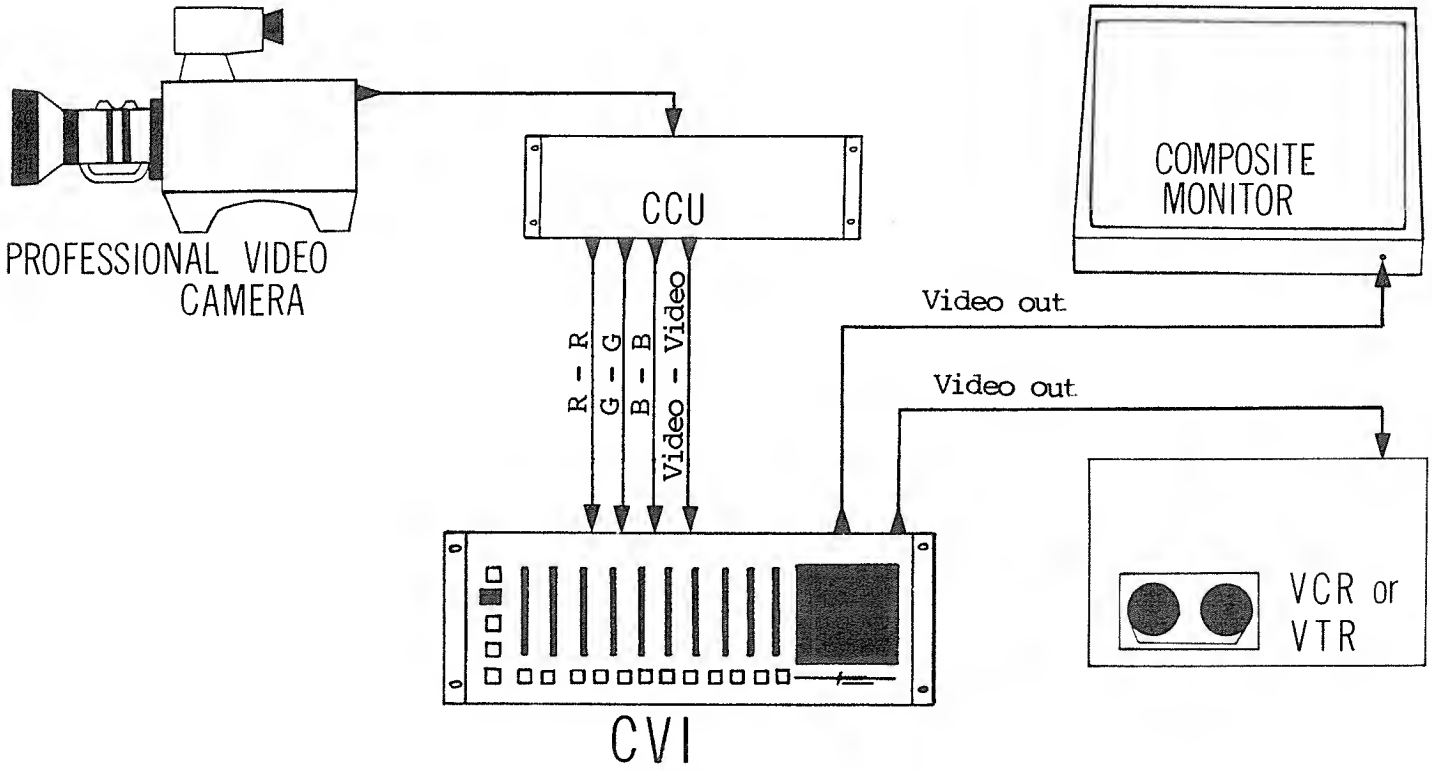


TAPE TO TAPE DUB WITH CVI PROCESSING

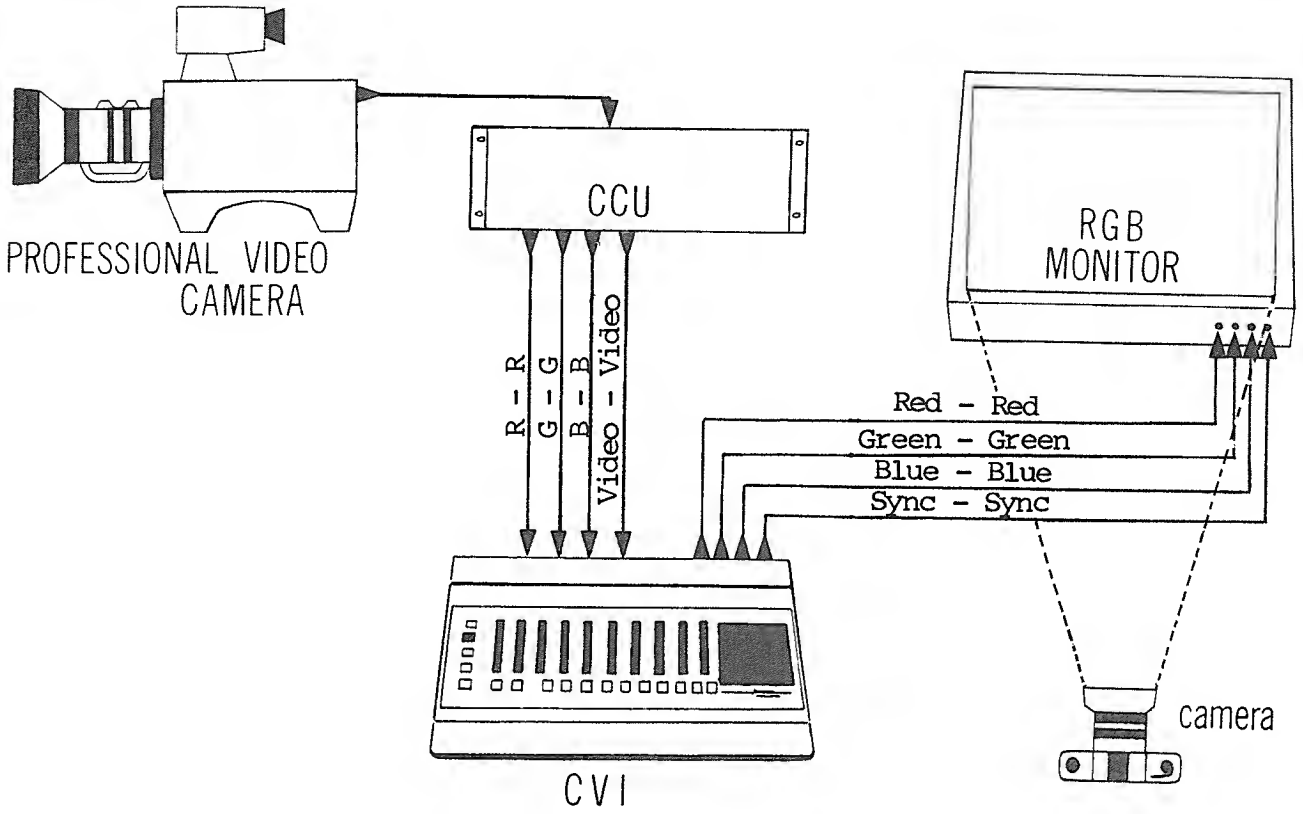
LOW-BAND LIVE FIELD OPERATION



LOW-BAND LIVE STUDIO USE

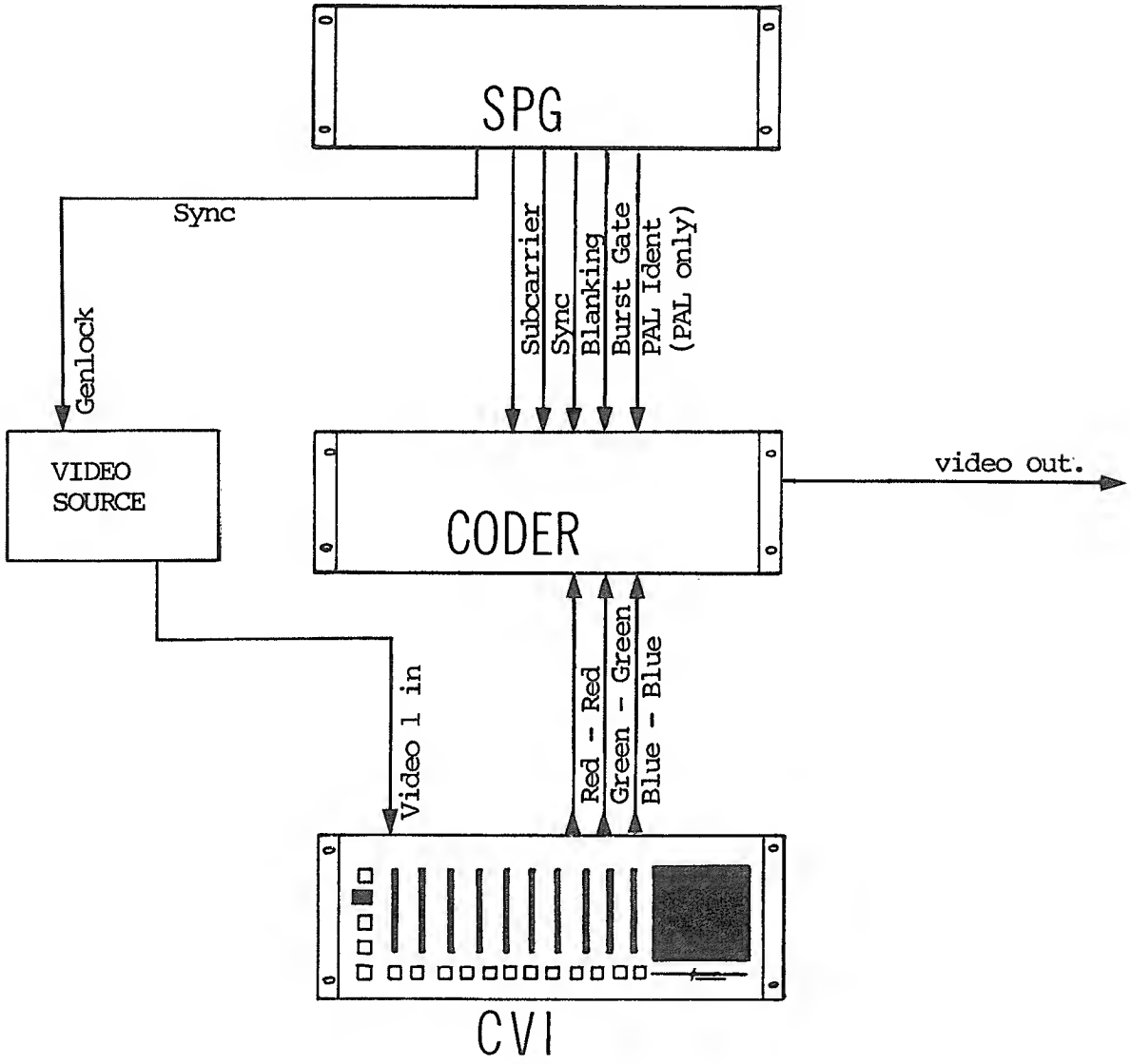


RECOMMENDED CONFIGURATION FOR SLIDE CREATION



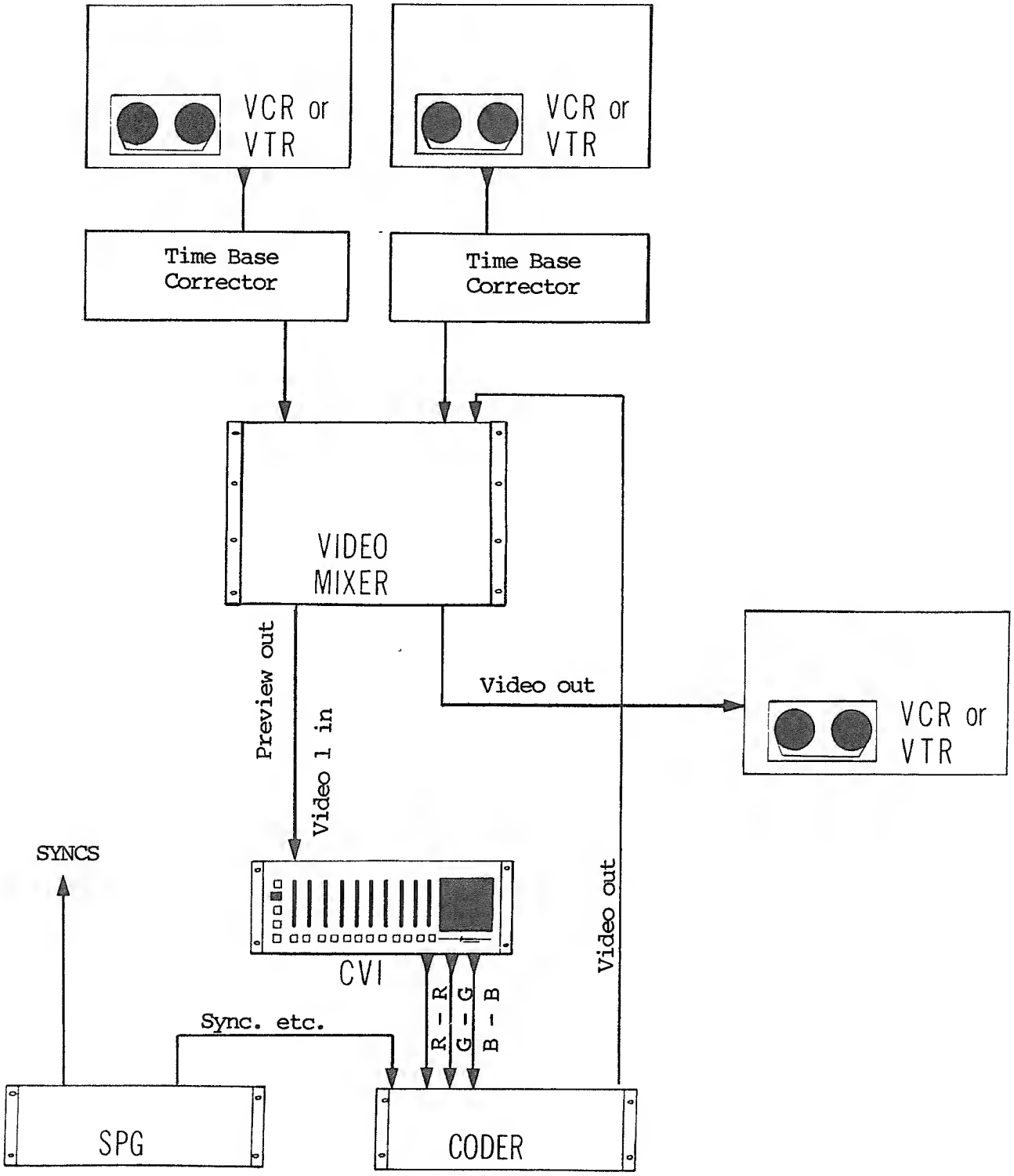
All screen images in this manual were taken using this configuration. Better results may be obtained using a film recorder where available, but ensure that the recorder handles at least 4096 colours, and that it is compatible with standard RGB video.

OUTPUT CONFIGURATION FOR BROADCAST COMPATIBLE APPLICATIONS

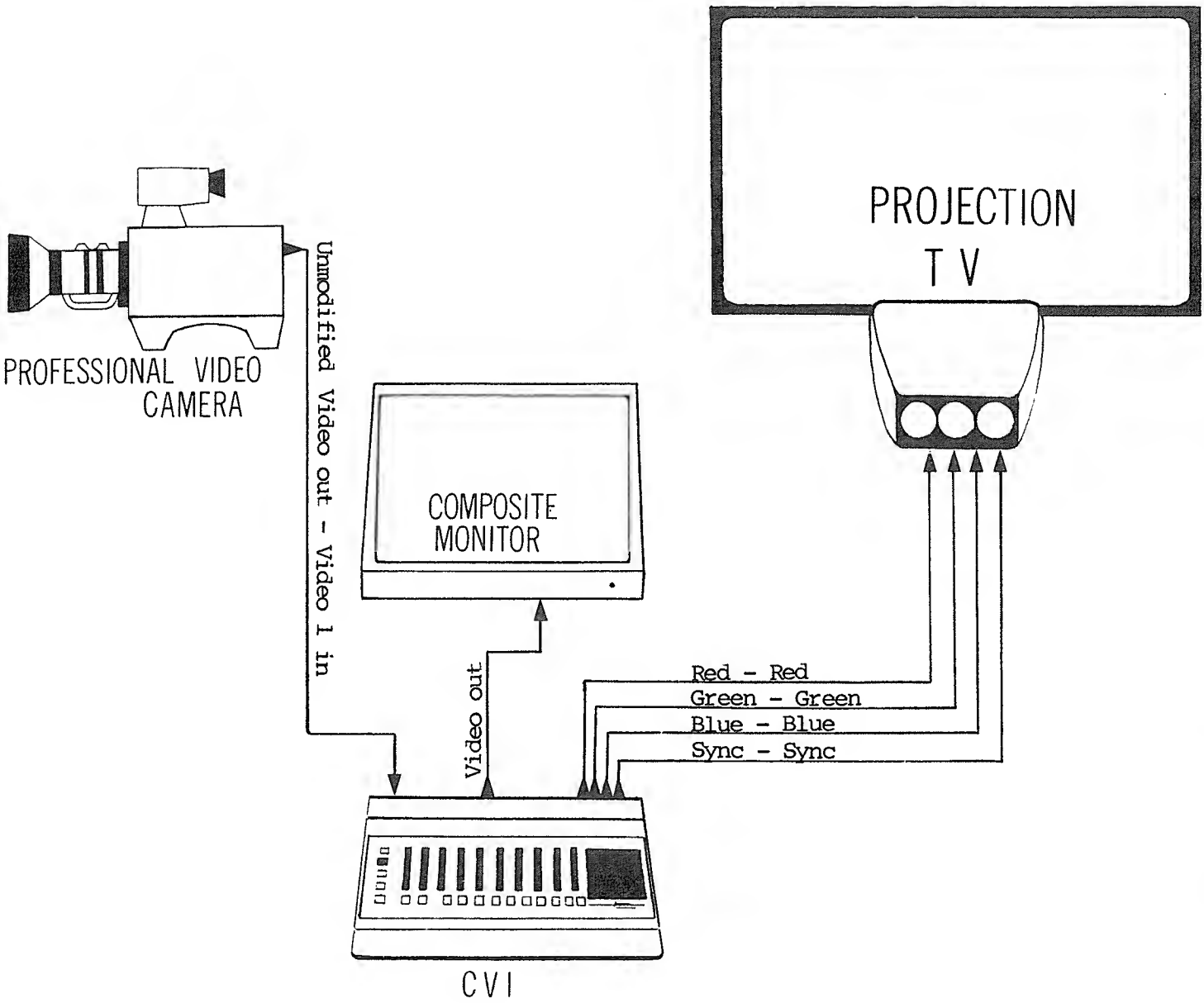


Use of the RGB inputs is also recommended, where possible, for optimum picture quality.

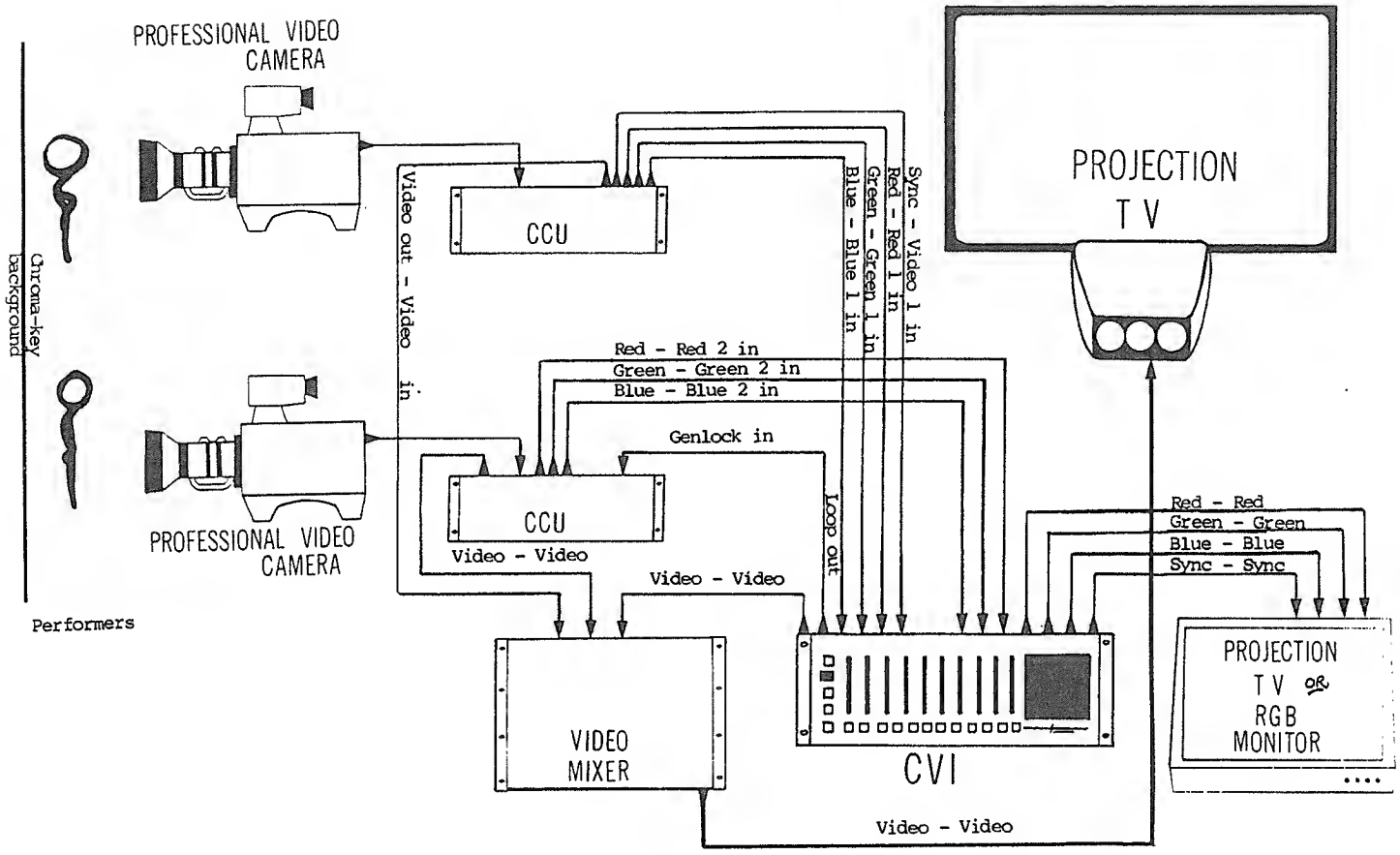
POSSIBLE CONFIGURATION FOR POST-PRODUCTION FACILITY USING COMPOSITE VIDEO



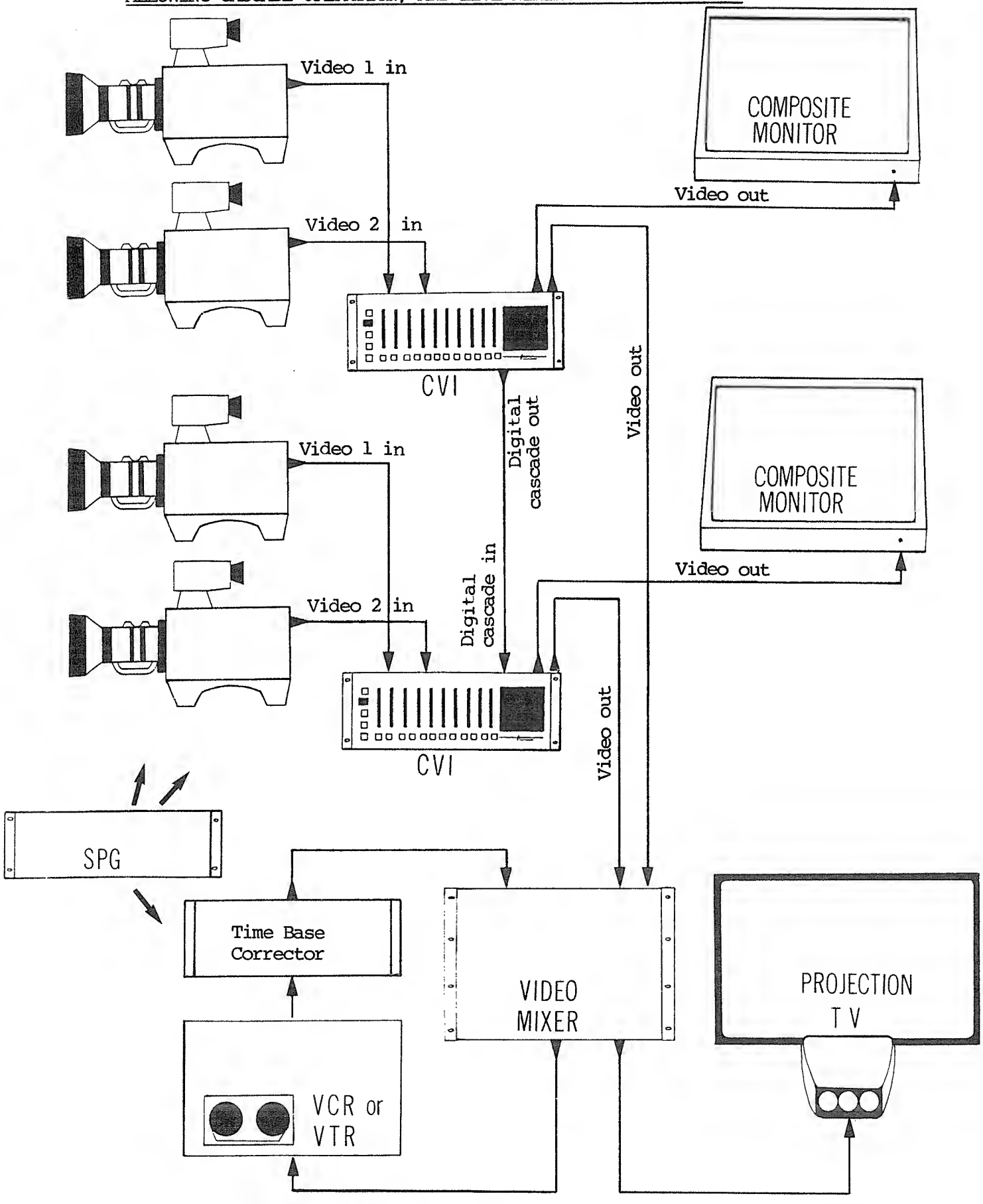
LIVE OPERATION AT CONCERTS: MINIMUM SYSTEM



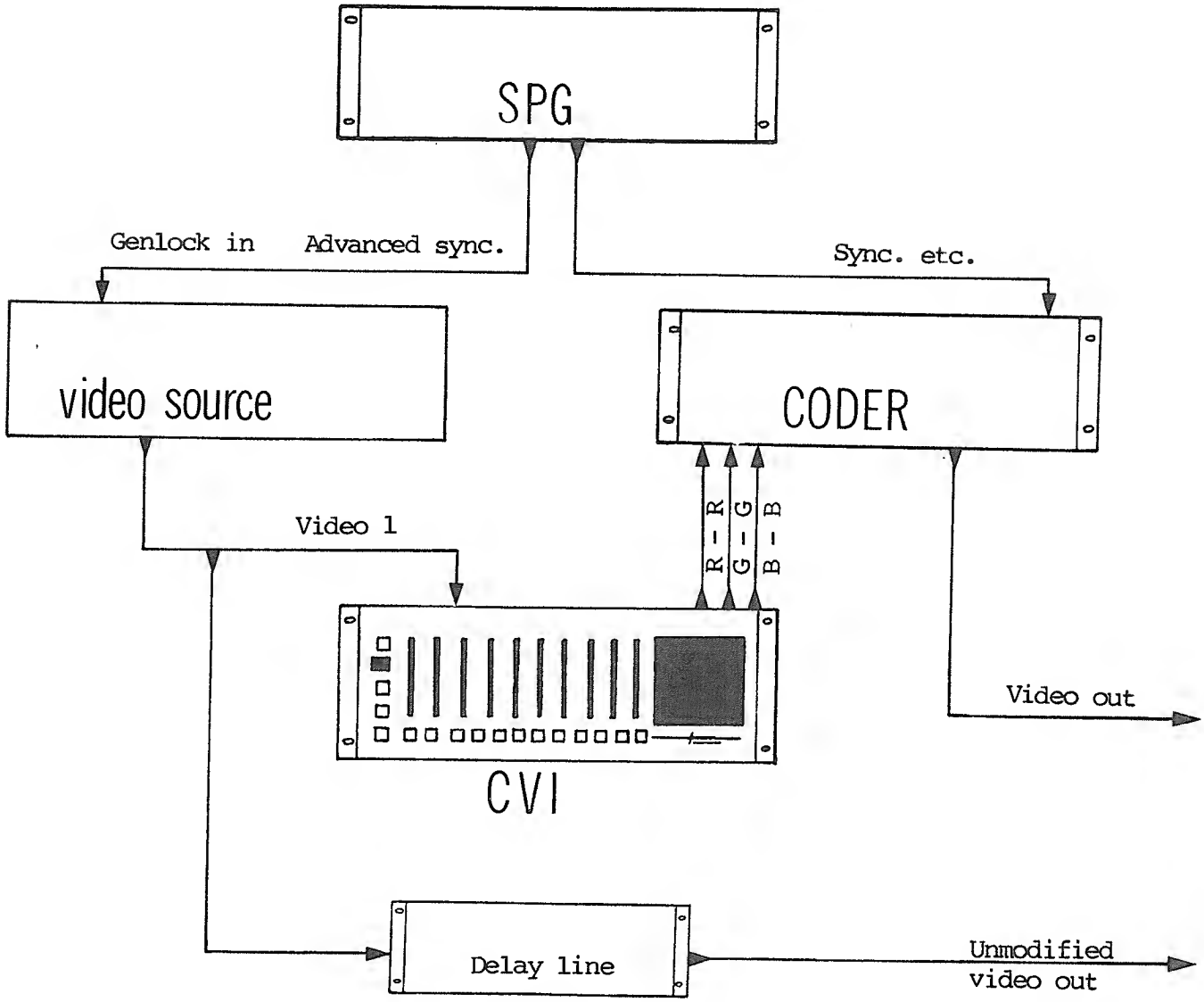
POSSIBLE CONFIGURATION FOR LARGER SCALE LIVE PERFORMANCE



EXAMPLE OF LIVE CONFIGURATION USING TWO CVI'S,
ALLOWING CASCADE OPERATION, AND LIVE MIXING BETWEEN EFFECTS

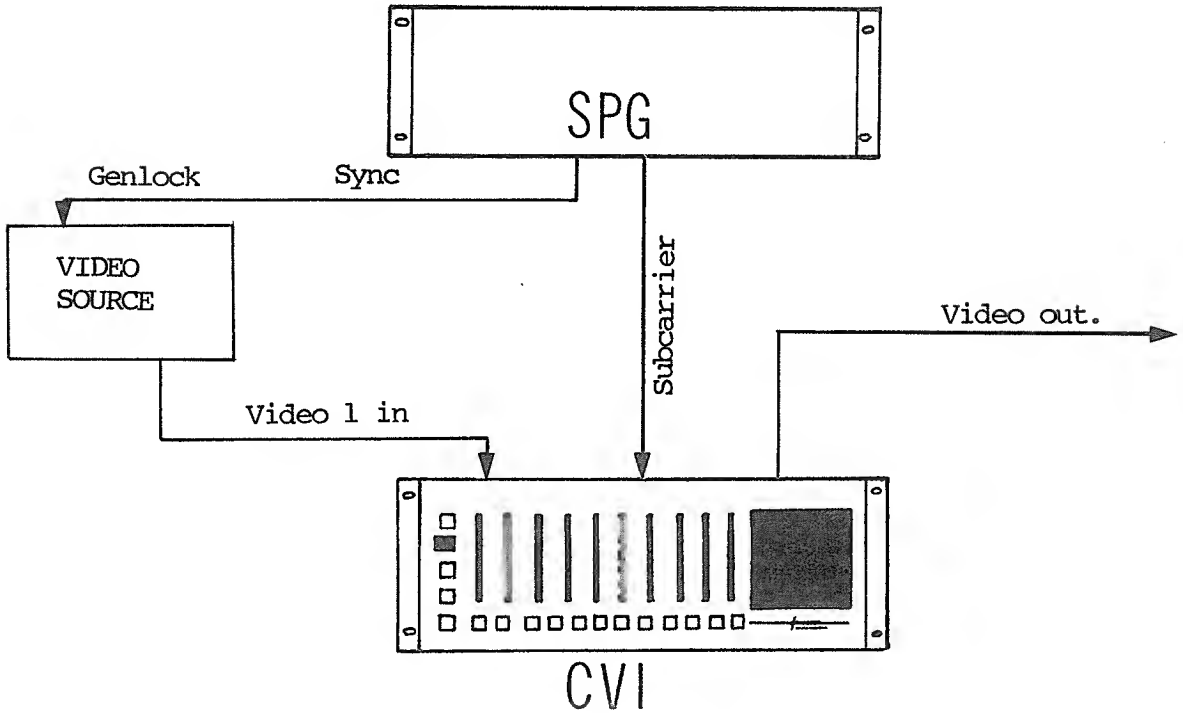


USE OF ADVANCED SYNC WITH EXTERNAL CODER TO MATCH VIDEO PICTURE POSITION



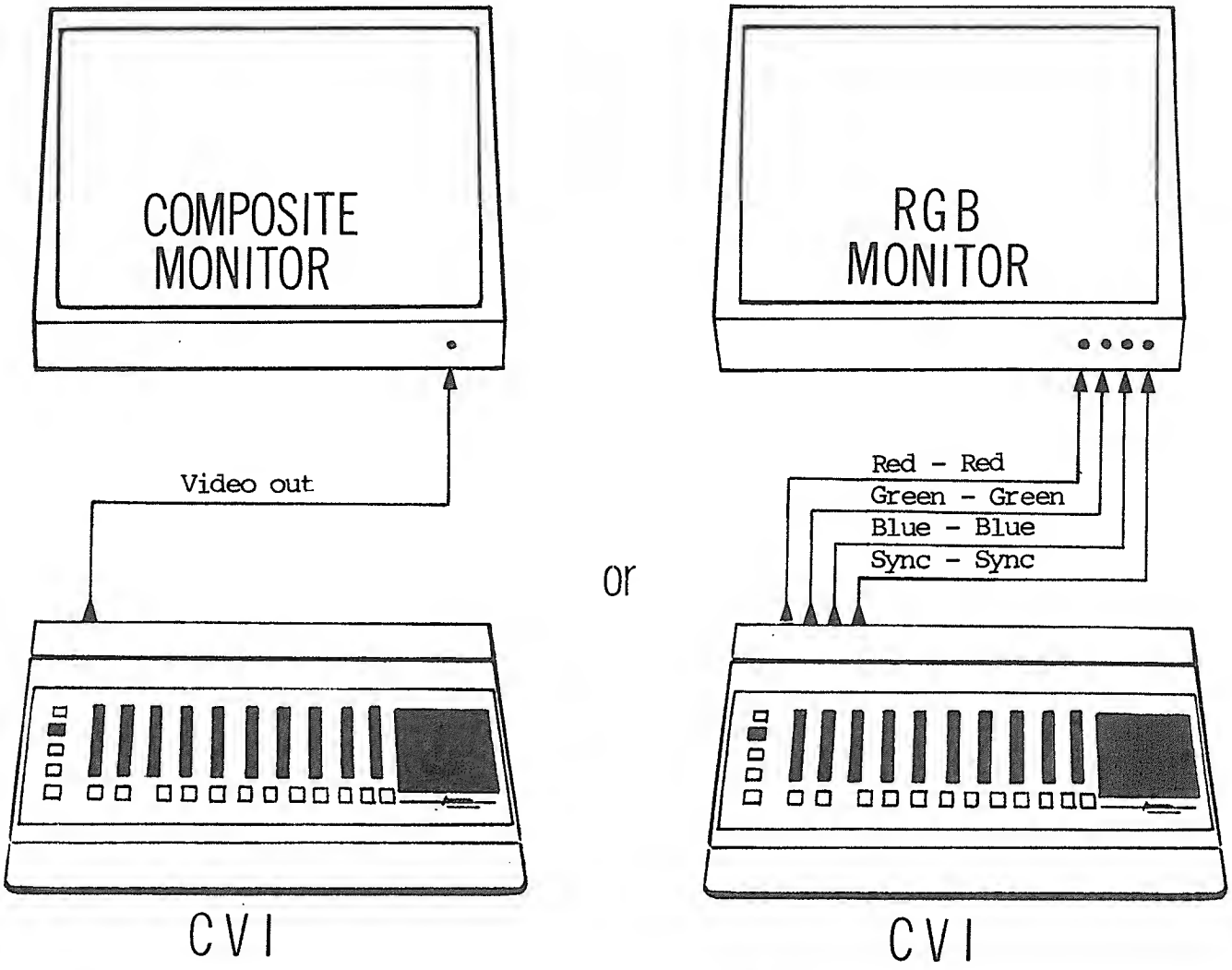
The delay is approximately 1 microsecond for RGB to RGB, and 2 microseconds for Composite to Composite video. A tunable delay line is recommended.
A delay of one field is also present for some effects.
Compensating for this is not recommended, as the field delay is not preset in all effects.

USE OF THE EXTERNAL SUBCARRIER INPUT

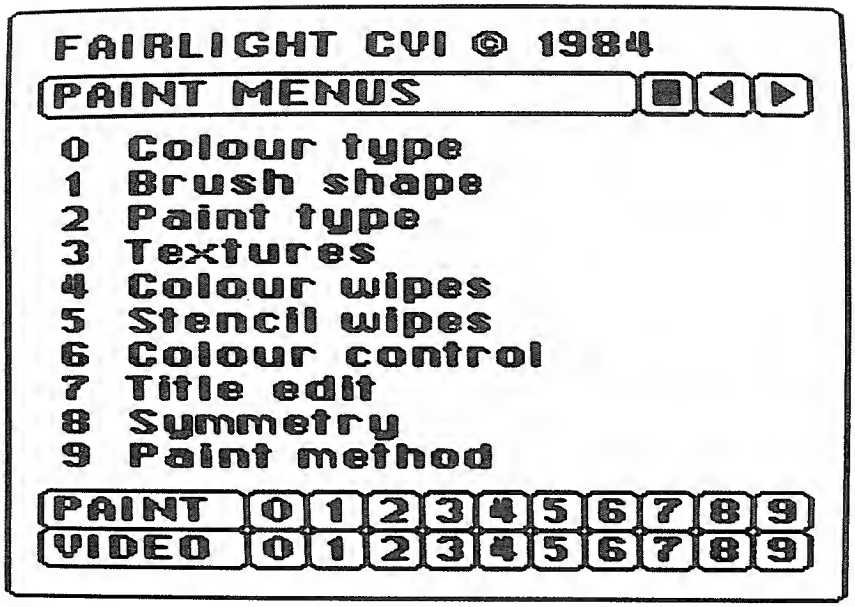


An external subcarrier input is provided for those users wishing to use the CVI's internal Coder in a post-production environment. This allows the adjustment of subcarrier phase, and therefore matching of colour when used with a composite video mixer. Coarse and fine phase adjustments are available, covering 360 degrees. See the option switch section at the beginning of this chapter.
NOTE: for broadcast compatible aplications, an external broadcast rated Coder and SPG must be used.

STAND-ALONE MODE



The CVI may be used without video inputs. In this mode, only the paint facilities are available. Use with a composite video monitor in stand-alone mode is not recommended, as colour stability is not guaranteed. Use the RGB configuration where possible.



The PAINT MENUS menu is a list of the available menus in the paint-draw category. These menus can be selected by the means outlined in the MENUS section in the INTRODUCTION.

0) **COLOUR TYPE:** Selects the way in which the colour you DRAW or WIPE with affects the colour already on the screen.

1) **BRUSH SHAPE:** Defines the shape and size of brush (line) you draw with. Brush shapes apply to both the colour and stencil (matte) planes.

2) **PAINT TYPE:** Selects the simulation of the type of 'paint' you use. eg. FLAT is equivalent to using opaque acrylic paints, airbrush simulates an airbrush effect, etcetera. Specifically, PAINT TYPE controls the way in which COLOUR DEPTH varies over the brush surface.

3) **TEXTURES:** Defines visual texture to be used in different ways on the screen, by either drawing with it, filling areas, or wiping the whole screen with the texture. Textures may be used on both the colour and stencil planes.

4) **COLOUR WIPES:** Defines changes to the colour plane which occur over the entire screen.

5) **STENCIL WIPES:** Defines changes to the stencil (matte) plane which occur over the entire screen.

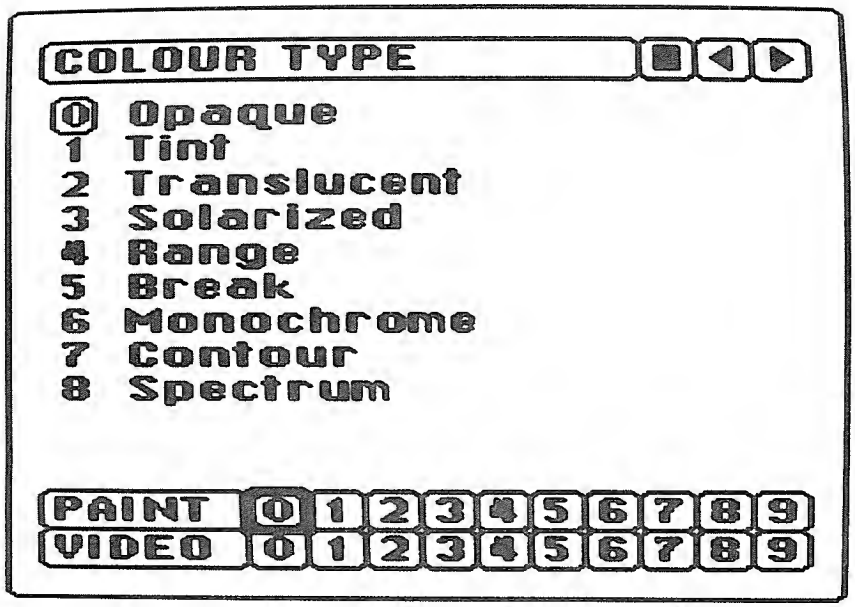
6) **COLOUR CONTROL:** Defines what is controlling the colour specified.

7) **TITLE:** Enables you to edit a title or caption. It includes an on-screen alpha numeric keyboard. Titles apply to both the colour and stencil planes.

8) **SYMMETRY:** Selects a symmetry which is used for drawing, both on colour and stencil planes. Symmetry occurs as the image is drawn.

9) **PAINT METHOD:** Defines how the pen movements on the graphics pad are interpreted into lines and shapes on the screen.

COLOUR TYPE MENU



This menu defines the way that the colour you draw with affects (i.e. combines with) the colour on the screen. This is akin to specifying whether paint is to be opaque or translucent, except that this menu allows an extra range of options beyond those encountered in traditional media. Interactions between 'paint' and the existing image that cannot readily be described in words are easily achieved. For this reason, experimentation is probably the best method to find out what the COLOUR TYPES do.

This menu allows you to make one selection at any one time.

COLOUR TYPE selections are closely related to COLOURIZE TYPE selections. COLOUR TYPES, however, apply only to still images, and occur as you draw on the screen or wipe the screen with certain COLOUR WIPES. Any combination of colour types may be used in any single image (though one at a time), in differing or overlaying areas of the screen. COLOURIZE TYPES affect the entirety of the digital image in real time, if the colourize button is pushed. The effect of various COLOUR TYPES on a drawn line or filled area can be explored by using the corresponding COLOURIZE TYPE to colourize the entire image without making a permanent change (a colourized image reverts to the original if the COLOURIZE button is turned off.)

0) **OPAQUE:** Specified colour replaces the colour on the screen. The COLOUR DEPTH control will have no effect.

1) **TINT:** The colour you draw with is added to, or subtracted from the colour you are drawing over - to the extent specified by the COLOUR DEPTH control. This gives an effect somewhat similar to transparent inks. This is the most subtle of the colour types, and very fine control of colour is available.

NOTE: If the COLOUR DEPTH control is at '0' the drawing will have no effect.
If the colour depth is positive (+), then the colour you are drawing with will make the image brighter, until the full brightness of colour is reached, after which it will have no further effect.
If the colour depth is negative (-), the the colour you are drawing with will make the image darker, until the minimum brightness of the colour is reached, after which it will have no further effect.

2) **TRANSULUCENT:** The colour you draw with is mixed with the existing screen colour to the extent that you specify with the COLOUR DEPTH control. This colour type is similar in effect to watercolours, e.g. Red over yellow yields an orange mix.

NOTE: The degree of translucency is controlled by the COLOUR DEPTH slider. If colour depth control is at "0", the colour you draw with is completely transparent, that is - it won't affect the screen colour.
If the colour depth control is set mid-way between '+' and '0' the result is a medium 'wash'.

3) **SOLARIZE:** This colour type is related to TINT, in that the colour you draw with is added to (or subtracted from) the screen colour. The difference is that if the sum of the on-screen colour, and the colour you draw with, should exceed maximum brightness in any component (red, green or blue), a colour discontinuity will occur. See the note at the end of this section.

4) **RANGE:** Line drawing on screen specifies the maximum brightness possible, for example:
1) If drawing with the H.S.V. and colour depth controls on bright red (all three H.S.V. at top) - only the red component of the colour that was already on screen would remain after the line drawing.
2) If drawing with a white line the line will have no effect.
3) If drawing with black, all you draw will be black, because black is the "brightest" colour that will remain.
4) If drawing with yellow - the yellow component of what is on screen will remain after the line is drawn.

5) **BREAK:** This colour type is somewhat similar to SOLARIZE, but the colour changes are somewhat more complex, and usually more aesthetic. See the note at the end of this section.

6) **MONOCHROME:** Whatever you draw will be monochromatically tinted by the colour you specify with the H.S.V. controls. The hue component of the existing picture is removed and only the tonal value (black, grey and white) information is used. This tonal value is then tinted by the selected colour.

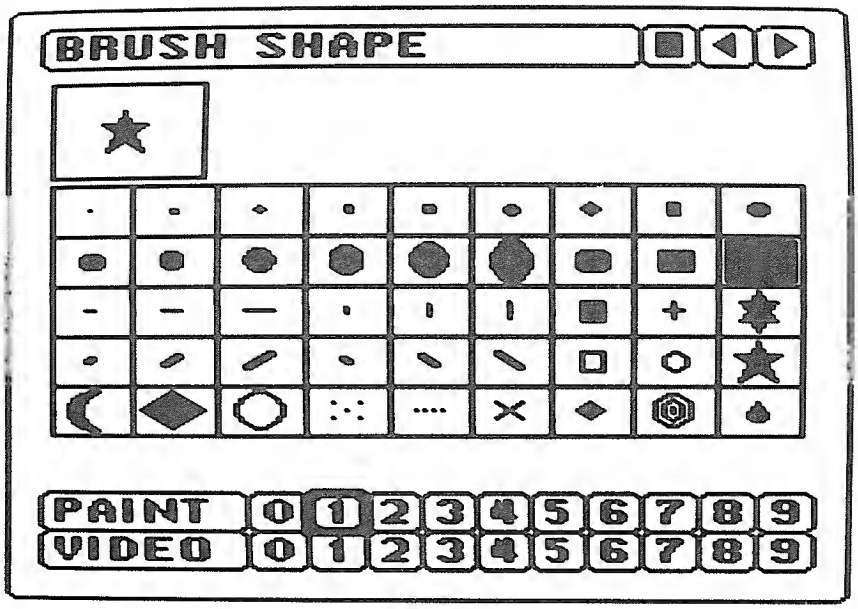
7) **CONTOUR:** This colour type is basically a form of posterizing. The component (red, green and blue) colours of the Hue, Saturation, Value selection will determine the degree of posterizing in the corresponding component colours of the resultant image. See the note at the end of this section.

8) **SPECTRUM:** This colour type converts the **intensity** of the original image into the **hue** of the result. This hue is offset by the HUE specified by the H.S.V. controls, the SATURATION control makes the result pastel, if down from maximum, and the VALUE control affects the variety of colours on the screen. The COLOUR DEPTH control affects the degree in which the original image is changed. See the note below.

NOTE:

COLOUR TYPES: Solarized, Range, Break, Monochrome, Contour and Spectrum (selection 3 - 8) are best put to advantage when used in conjunction with COLOUR WIPES: FILL, WIPE ➡ and WIPE ⬇, with an appropriate masking pattern on the stencil plane.
A colour wipe will effectively be the same as COLOURIZING the portion of the screen image that you have specified with the stencil, with the colour type that you choose. See the COLOURIZE TYPE menu section for more information.

BRUSH SHAPE MENU

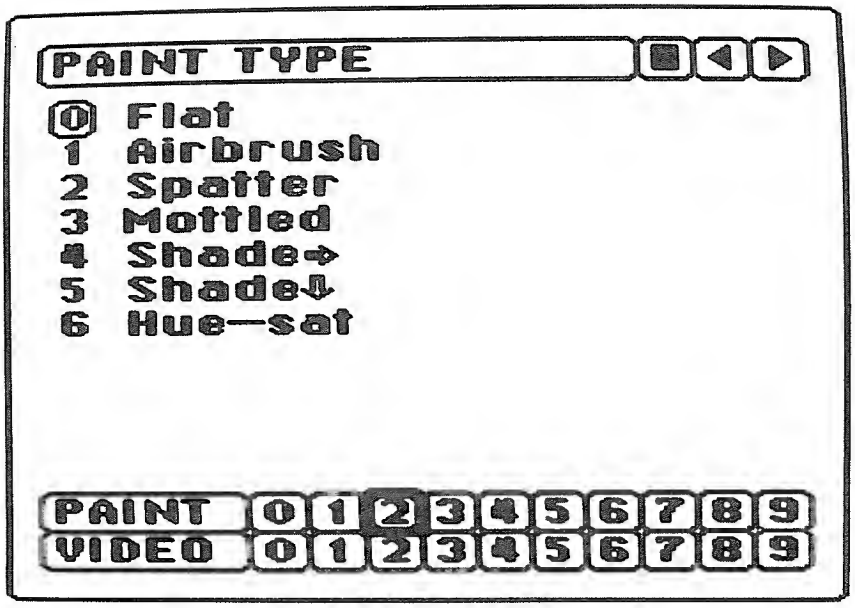


This menu allows you to select from a choice of 45 brush shapes. These 'brushes' can be used to paint or draw in a variety of ways, either on the image plane or the stencil plane.

Drawing will remain in the brush shape specified until changed.

Selection is by the pen on the graphic pad: a cursor will appear on the menu indicating the pen position. Move the cursor so that it is over the BRUSH SHAPE of your choice, and lift the pen. The brush shape will appear in the box to the top left of the menu.

PAINT TYPE MENU



This menu selects how the **COLOUR DEPTH** varies across the surface of the **BRUSH SHAPE** as it is drawn. This gives approximate simulations of different types of painting media as flat acrylics (FLAT), airbrushes (AIRBRUSH and SPATTER), chalks (MOTTLED), and watercolours (SHADE).

0) **FLAT:** The simplest paint type. All of the area covered by brush movement will have consistent colour depth, that which is specified by the colour depth control.

1) **AIRBRUSH:** Air brush simulation. The outer edges of the line will have less colour depth, and the centre will have the full colour depth specified by the COLOUR DEPTH control.

2) **SPATTER:** This selection will leave a spattering of random dots in the areas covered by the lines drawn.

3) **MOTTLED:** Provides a mottled effect: the lines drawn will have random colour depth variations over the width of the brush, providing an irregular appearance.

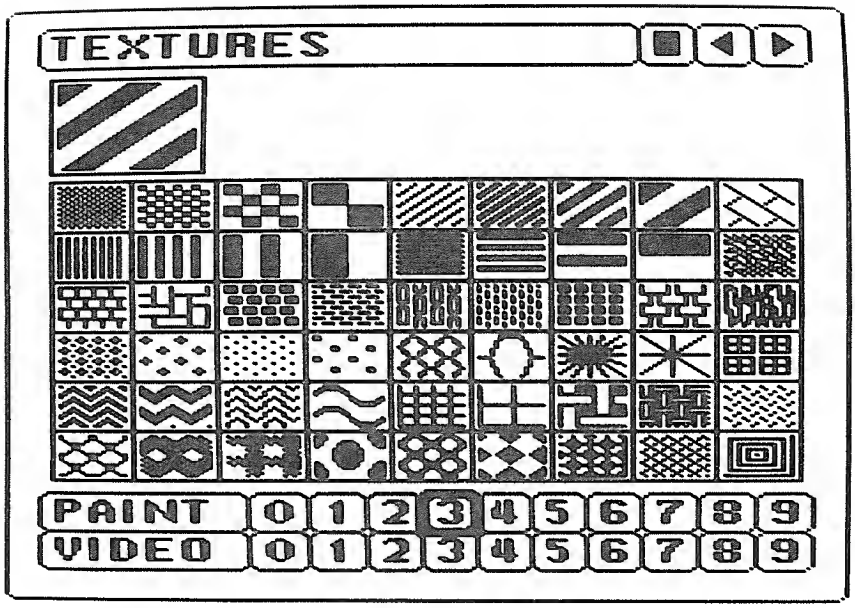
4) **SHADE→:** The left hand side of the brush will have full intensity colour, which will fade across the brush shape to the right hand side, which will have minimum intensity.

5) **SHADE↓** : The top of the brush will have full intensity colour, which will fade down the brush shape to the bottom, which will have minimum intensity.

6) **HUE-SAT:** This paint type behaves differently from the others, in that it ignores any colour specified by the Hue, Saturation and Value controls, and replaces it with a colour which is dependant upon the position of the point drawn to the screen. The replaced colour is of varying hue and saturation, but always has full value (i.e. brightness). COLOUR TYPES are still active, which can further modify the colour that HUE-SAT selects.

The FAIRLIGHT logo that appears when the CVI is switched on is an example of the HUE-SAT paint type.

TEXTURE MENU



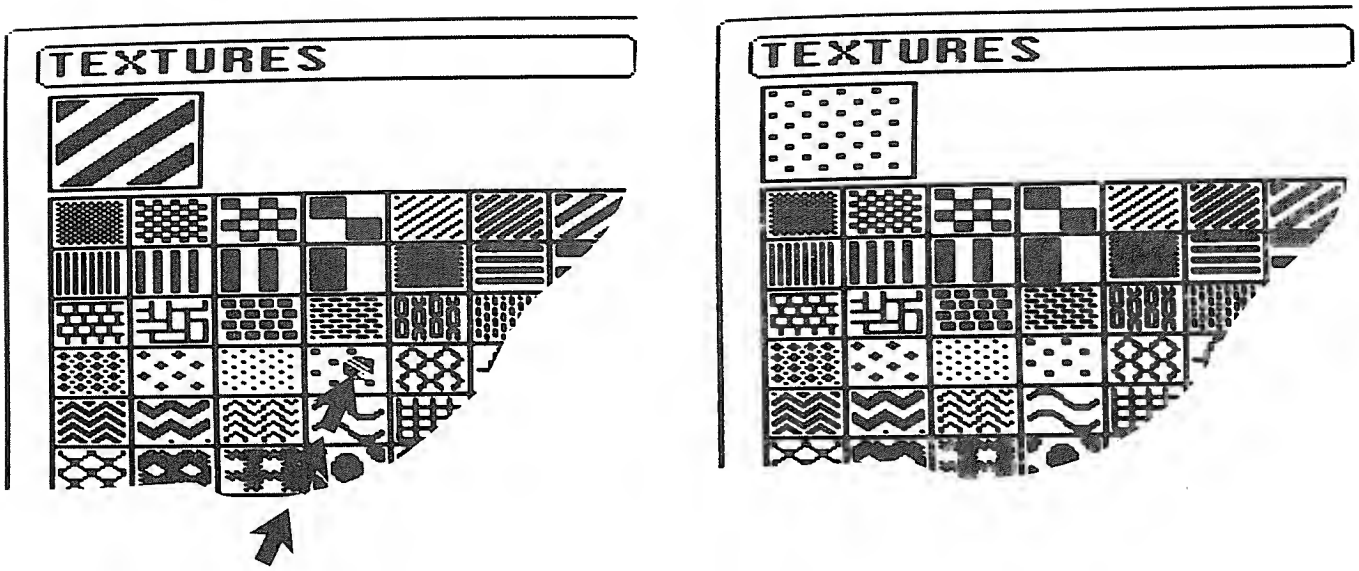
The Texture Menu allows you to select from a choice of 54 Textures. 'Textures' are patterns that can be drawn with, wiped over the screen, or used as stencils. Specifically, they specify a repeating pattern that can be used as a mask or stencil for paint/draw functions. Where the pattern is on (**white** on the menu pattern), the point on the screen will be drawn. Where the pattern is off (**blue** on the menu pattern), the point will not be drawn.

To use a texture while drawing, press the **USE TEXTURE** button. This applies to drawing on the image plane (DRAW COLOUR button) or drawing on the stencil plane (DRAW STENCIL button) or both. Textures may be 'wiped' over all or part of the screen by selecting TEXTURE in the COLOUR WIPES menu. Likewise, TEXTURE can be selected in STENCIL WIPES to cover the stencil plane with a pattern.

To select a TEXTURE:

A) Select your Texture by pen and graphic pad: a cursor will be displayed on the menu.
B) Move cursor to your choice of texture.
C) Lift the pen from the graphics pad.
D) Selected texture appears in boxed upper left hand corner.
E) Return to Image (press the STOP button or select the white square).

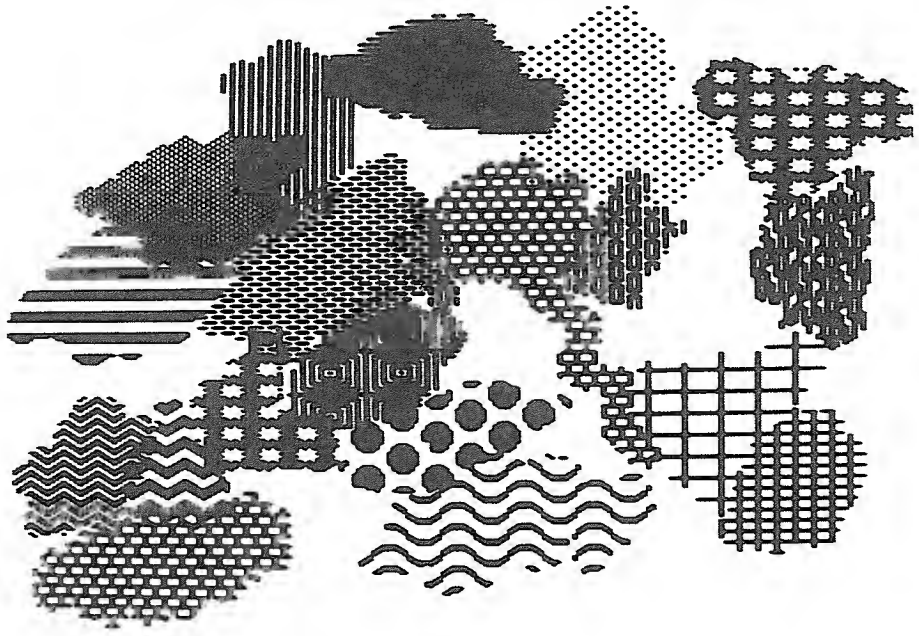
NOTE: 1) When wishing to draw or paint with texture ensure that USE TEXTURE button is ON.
2) If drawing with texture (or without texture) DRAW or DRAW LOCK must also be on.
3) To wipe the colour plane with a texture, TEXTURE must be selected on COLOUR WIPES Menu. Press WIPE COLOUR button.
4) To wipe the stencil plane with a texture, TEXTURE must be selected on STENCIL WIPES Menu. Press WIPE STENCIL button.



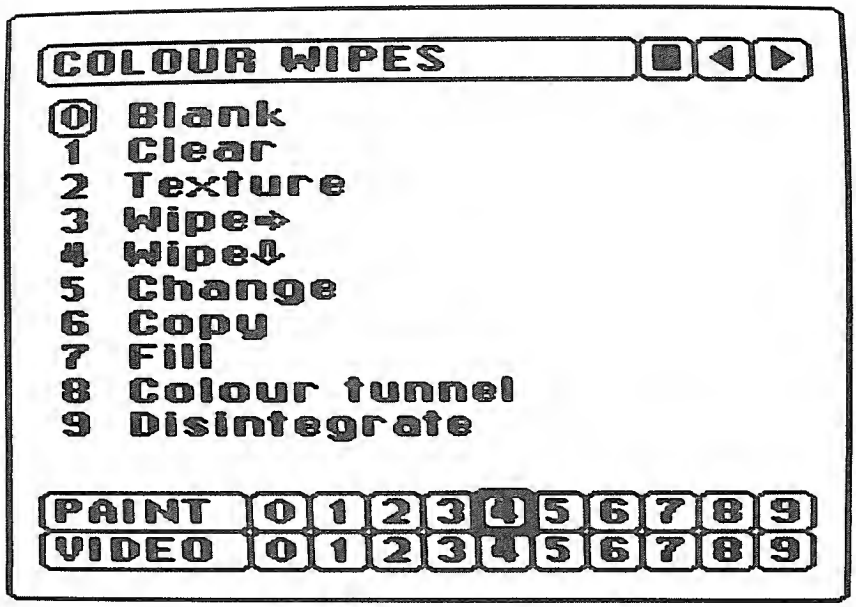
MOVE CURSOR, LIFT PEN

SELECTED TEXTURE APPEARS

Method of texture selection



Example of textures as they are drawn



Colour wipes are processes that happen to the whole screen. Pressing the WIPE COLOUR button when an image is displayed on the screen will activate the selected colour wipe function. The LIGHT in the WIPE COLOUR button will go out as soon as the colour wipe is completed. You may cancel the wipe before it finishes by pressing the STOP button.

0) **BLANK:** Clears the screen instantly to a blank white image.

Procedure:

a) Select BLANK in Colour Wipes menu.
b) Return to Image.
c) Press the WIPE COLOUR button. The screen will be instantly cleared to white.

1) **CLEAR:** Clears the entire screen instantly to the colour specified by the H.S.V. controls. It enables you to adjust the screen to the desired colour. This wipe must be terminated by the STOP (or MENU) button: it will continue displaying the latest colour indefinitely until STOP is pressed, excluding other CVI functions from operating.

Procedure:

a) Select CLEAR in Colour Wipes menu.
b) Return to Image.
c) Press the WIPE COLOUR button. The screen will be instantly cleared to the colour specified by the H.S.V. controls.
d) Adjust the H.S.V. controls to obtain the desired colour.

e) Be sure to press the STOP button when you have selected your colour!

NOTE: The screen colour and the drawing colour will now be the same. The cursor and any lines drawn will not be visible (as they will be the same colour as the background) unless the colour is changed.

2) **TEXTURE:** Wipes the screen using the texture selected on the TEXTURE MENU. The colour written is that which is specified by the H.S.V. controls, and the COLOUR TYPE selected is also used. If the USE STENCIL function is on, then only the area unprotected by the stencil is wiped. Altering the H.S.V. controls during the wipe will change the colour of the texture written, giving a blended effect. The wipe moves across the screen from left to right and takes about 4 seconds to complete, depending on which COLOUR TYPE and TEXTURE functions are used.

Procedure:

a) Select TEXTURE in Colour Wipes menu.
b) Select the desired texture in the TEXTURES menu.
c) Return to Image.
d) Press WIPE COLOUR: the texture will be wiped over the screen.

3) **WIPE ➡:** Wipes the screen from left to right. The colour is controlled by the H.S.V. and COLOUR DEPTH sliders. Altering the H.S.V. controls during the wipe will result in a colour blend, with vertically orientated bands of colour. The COLOUR TYPE selection is used, so the colour wipe is not necessarily opaque, but may subtly or drastically alter the existing image on the screen. WIPE ➡ can be applied to only a portion of the screen if desired, by using the stencil to protect the areas you wish unchanged.

Procedure:

a) If only a portion of the screen is to be cleared, first generate the stencil: using DRAW STENCIL - define by pen and graphic pad, and/or by STENCIL WIPES. Ensure that the USE STENCIL button is on.
b) Select WIPE ➡ in Colour Wipes menu.
c) Return to Image.
d) Press the WIPE COLOUR button. The screen will be wiped with the specified colour and colour type.
e) You may change the colour as it is being wiped.

4) **WIPE ⬇ :** This function is identical to WIPE ➡ except the direction of the colour wipe is from top to bottom of screen, resulting in horizontal bands of changing colours if the H.S.V. and COLOUR DEPTH controls are altered during the wipe process.

This wipe is useful for backgrounds - the horizontal banding evident with moving the H.S.V. and colour depth controls, creates a basis for landscapes and abstract visuals.

Procedure: same as WIPE ➡ above.

5. **CHANGE:** Reads the screen colour and writes it back to the screen during the wipe, replacing it with new information depending on which colour type, paint type, texture, symmetry or stencil is used. You may have an image that you like, but wish to change it into a new image based on the old one. You may adapt it, using this colour wipe. Time taken to complete a CHANGE wipe depends upon the symmetry chosen, and varies from 6 to 60 seconds.
NOTE: The H.S.V. controls are not used for this wipe.

Procedure:

a) Select CHANGE in Colour Wipes menu.
b) Select the desired symmetry from the SYMMETRY menu.
c) Return to Image.
d) Press WIPE COLOUR: The wipe will commence.

6) **COPY:** This is a cut and paste function that is quite versatile, enabling you to juxtapose elements in your image to create multiple repetition. It is usually slower than the CUT and PASTE function in the PAINT METHOD menu, but allows unconnected stencil areas to be copied as a group. COPY may be stopped at any stage by pressing the STOP button.

TO COPY:

a) Define the area to be copied by using the STENCIL DRAW and /or STENCIL WIPE functions. To see the stencil as it is being drawn, enable the STENCIL selection in the INDICATORS menu.
b) Select COPY in the COLOUR WIPES menu.
c) Return to Image.
d) Press WIPE COLOUR button.
e) Touch the pen to graphic pad. A cursor saying FROM➔ will appear, and the stencil area will be displayed. (Stencilled area will be brighter than the non-stencil area).
f) Move the tip of the cursor to a point within the area to be copied (either stencil on or stencil off). This is the critical step: ensure that the cursor tip is within the correct region, or the background will be copied!
g) Lift the pen from the graphic pad.
h) When the pen is brought into contact with the pad again, another cursor appears on screen saying: TO➔. Move it to the position you wish to copy the stencilled image to.
i) Lift the pen from graphic pad in preferred position. The cursor TO➔ will disappear and the copy function will commence. It takes approximately 5 seconds to complete.

NOTE: 1) If the USE TEXTURE button is on, the copied image will be textured.

2) If the **COLOUR TYPE** menu selection is other than opaque, the image copy will not be a 'solid' image. For instance, if TRANSLUCENT colour type is used with the COLOUR DEPTH control midway between + and 0, the copied image will be similar in effect to a photographic double exposure.

3) If a SYMMETRY other than OFF is selected in the symmetry menu, the copied image will be in that symmetry.

4) The colour of the copied image may be altered by changing the H.S.V. controls between FROM➡ and TO➡ steps.

5) The initial image - that is, the original stencil area, is protected from being copied over. If the copy is intended to be overlapping the initial image, cancel the protective stencil by turning off USE STENCIL after pressing WIPE COLOUR.

6) All of the stencilled areas of the polarity selected by the FROM ➡ cursor will be copied. They do not have to be connected.

7) If you wish to isolate segments of a complex stencil, use the cut and paste function in the PAINT METHOD menu.

8) The COPY function may be repeated to create complex compositions.

Experiment: it's a lot easier than it sounds!

7) **FILL:** An area fill. This wipe enables you to fill an area on the screen with colour, texture or colour modification. The area to be filled is specified on the STENCIL plane, and must be created before the FILL wipe is started. The boundary of the area to be filled must be continuous; if there are any 'leaks' the filling process will continue until the next boundary. To terminate the fill before it is complete, press the STOP button.

TO FILL:

a) Select FILL in Colour Wipes menu.
b) Return to Image.
c) Press WIPE COLOUR: stencil will be displayed.
d) Pen on graphic pad will make a cursor saying FILL➡ appear on the screen.
e) With the pen still down, you may alter the H.S.V. controls to the desired colour. Move the arrow tip to within the stencil outline to be filled. This stencil area may be of either polarity.
f) Lift the Pen: Area will be filled. The time required to fill an area is dependant on the size and complexity of the area.

8) **COLOUR TUNNEL:** Provides a continually changing background that 'radiates' out from screen centre.

METHOD:

a) Select COLOUR TUNNEL in the Colour Wipes menu.
b) Return to Image.
c) Press WIPE COLOUR button.
d) A pattern will be written into the image store. This will take approximately 3 seconds to complete, then current

colours, as determined by the COLOUR CONTROL menu, will begin 'radiating' out from the centre of the screen.

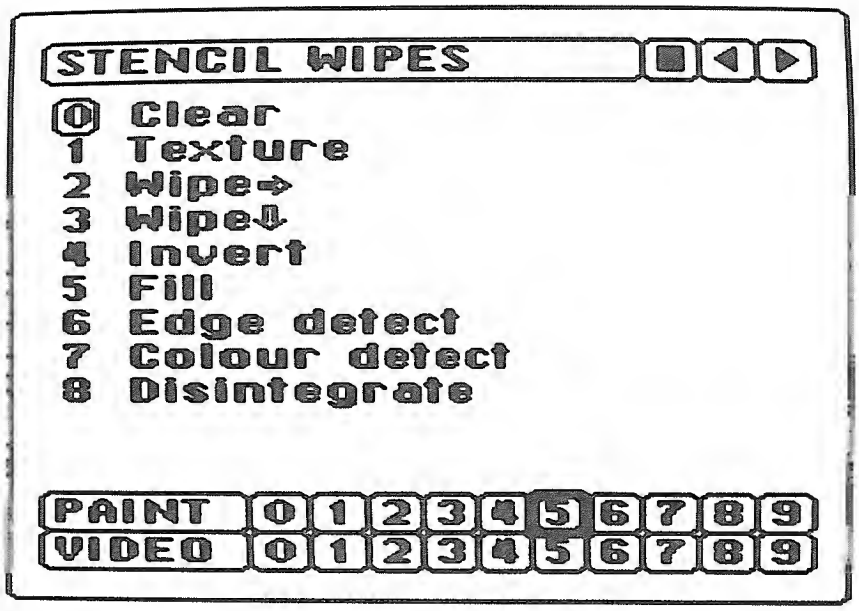
e) Press STOP to terminate the process.

> **CAUTION** Use this wipe with care!!
>
> Prolonged viewing of this wipe may result in eyestrain and/or psychological disorders! Persons prone to epilepsy or similar conditions are advised to avoid this wipe entirely.

9) **DISINTEGRATE:** This selection writes random dots to the colour plane continually, until the stop button is pressed. The dots are written in the current colour, which may be changed during the wipe by changing the H.S.V. and COLOUR DEPTH controls. The COLOUR TYPE menu determines the way the random dots interact with the colours already present on the screen. Subtle mottlings can be achieved by using TRANSLUCENT or TINT colour types with a low setting on the COLOUR DEPTH control. A frozen photographic image can be converted to something very similar to a POINTILLIST style painting by using TINT colour type, and changing the COLOUR DEPTH from - to + while changing the H.S.V. controls using this wipe. Portions of the screen can be protected from 'disintegration' by using the stencil in the normal fashion.

TO DISINTEGRATE:

a) Select DISINTEGRATE.
b) Return to Image (stop button).
c) Press WIPE COLOUR button.
d) Random dots will appear on the image in the colour, colour type, and colour depth selected.
e) Press STOP to terminate the process.



STENCIL WIPES are set of events that control what is on the **stencil plane.** The stencil plane is an internal digital control image (equivalent to a 'key' or 'matte' in some applications) with multiple uses. The STENCIL WIPES are similar to the COLOUR WIPES, in that they affect the entire screen, with the difference that the STENCIL WIPES are applied to the internal stencil plane instead of the colour planes (see 'STENCILS: What are they?' in the INTRODUCTION).

Whatever is selected on the above menu is implemented when the WIPE STENCIL button is pushed. The light in the WIPE STENCIL button will go on when the button is pressed, and will go off when the stencil wipe is complete. They may be stopped at any stage by pushing the STOP button. If the INVERT STENCIL button is on, the stencil polarity will flip.

0) **CLEAR:** Instantly clears the stencil plane to the polarity specified by the INVERT STENCIL button.

Procedure:

a) Select CLEAR in Stencil Wipes menu.
b) Return to Image.
c) Press WIPE STENCIL button.
d) The STENCIL will be instantly cleared.

1) **TEXTURE:** Will place whatever texture is selected on the TEXTURE menu over the entire stencil plane from the left to the right. Takes approximately 5 seconds to complete.

Procedure:

a) Select TEXTURE in Stencil Wipes menu.
b) Select the desired texture in the TEXTURES menu.
c) Return to Image.
d) Press WIPE STENCIL button.
e) The TEXTURE will be wiped over the STENCIL, taking about 5 seconds, from left to right.

2) **WIPE ➡** : First clears the stencil plane instantly, and then performs a slow (4 second) Stencil Wipe with left to right direction. The stencil advances exactly one line every field, so may be used for slow-scan effects or for horizontal wipes between two images.

Procedure:

a) Select WIPE ➡ in Stencil Wipes menu.
b) Return to Image.
c) Press WIPE STENCIL button. The wipe will commence.

3) **WIPE ⬇** : This stencil wipe is identical to WIPE ➡ , except that the stencil wipe is from top to bottom of the screen image.

Procedure: same as WIPE ➡ .

4) **INVERT:** This wipe inverts the INTERNAL STENCIL only - that is, it does not affect the chroma-key or external stencils. It takes approximately 8 seconds to complete, and wipes from left to right. This wipe is useful in conjunction with under/over effects (see STENCIL SOURCE menu), in that it allows inversion of only the internal stencil portion of a combined internal and chroma-key (under-over) stencil. It can also be used in similar ways to WIPE➡.

Procedure:

a) Select INVERT in Stencil Wipes menu.
b) Return to Image.
c) Press WIPE STENCIL button: the INVERT wipe will start.

5) **FILL:** This function fills an area on the stencil plane. It is similar to FILL in the COLOUR WIPES menu, but fills the stencil plane instead of the colour (image) planes. The boundary to the area to be filled must be continuous: if there are any 'leaks' the filling process will continue until the next boundary. To terminate a FILL before it is complete, press the STOP button.

TO FILL:

a) Draw stencil outline (DRAW STENCIL button must be on).
b) Select FILL in Stencil Wipes menu.
c) Return to Image.

d) Press WIPE STENCIL button: the drawn stencil will be displayed as increased brightness.
e) Put the pen to the Graphics Pad: a cursor FILL➤ will appear on screen.
f) Move cursor arrow tip to a point within the stencil outline that you wish to fill.
g) Lift Pen: stencil outline will be filled. The time taken varies with the complexity and size of the area to be filled.

NOTE: This function is useful in conjunction with **EDGE DETECT** stencil wipe, to fill in specific detected areas. A detected edge may need 'repairs' to make the boundary continuous before filling, to prevent 'leaks'. These 'repairs' can be made by using the normal stencil drawing functions.

6) **EDGE DETECT:** This stencil wipe enables you to detect any significant change in colour or intensity in the image. Wherever a change in colour over the screen occurs, the stencil is turned on, producing an 'edge'. This can delineate objects in a frozen or drawn image, and ease the task of defining areas for copying, filling, protection, and so forth. The existing stencil information is first cleared instantly.

TO EDGE DETECT:

a) Select EDGE DETECT in Stencil Wipes menu.
b) Return to Image.
c) Press WIPE STENCIL button.
d) EDGE DETECTION will occur over about 5 seconds, from left to right.

7) **COLOUR DETECT:** This wipe enables you to select a narrow range of colours to be stencilled, centered around the colour that you specify with the pen. It does not clear the stencil plane prior to the stencil wipe, thus allowing multiple colour detections to 'build up' a stencil region.

TO COLOUR DETECT:

a) Select COLOUR DETECT.
b) Return to Image.
c) Press WIPE STENCIL button.
d) Pen on Graphic Pad: a cursor displaying COLOUR ➤ will appear on screen.
e) Move the cursor arrow tip to the colour that you want detected on screen.
f) Lift the pen: all occurrences of this colour and similar colours will be detected, and the stencil will be turned ON in these areas. This wipe takes approximately 6 seconds to complete.

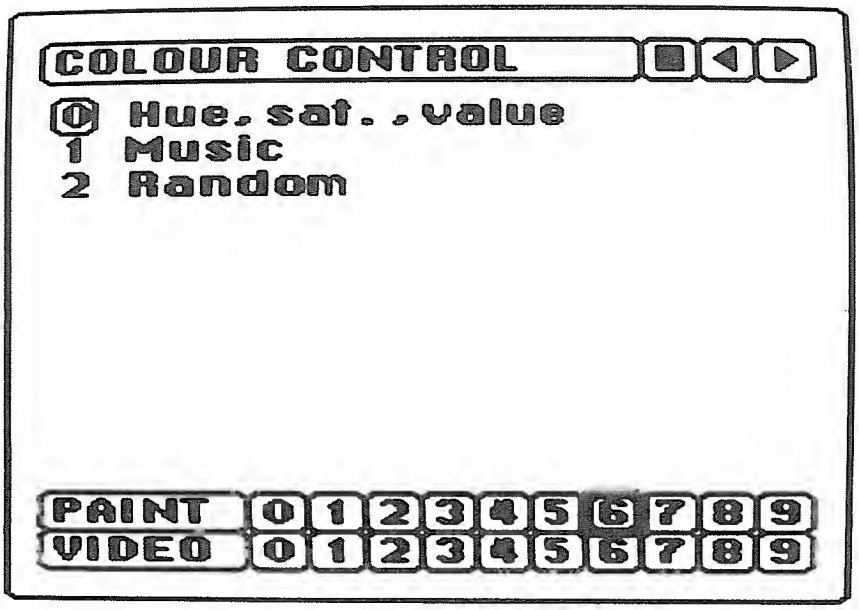
8) **DISINTEGRATE:** This selection writes random dots to the stencil plane continually, until the stop button is pressed. The dots are written in the current stencil polarity, which may be reversed during the wipe by pressing the INVERT STENCIL button. The visual effect of this wipe depends on the selections made in the STENCIL CONTROL menu. For example, the result may be a 'crumbling' of a still image into a live video image (with stencil off = STILL, stencil on = VIDEO in the STENCIL CONTROL menu) or vise versa.

TO DISINTEGRATE:

a) Select DISINTEGRATE in Stencil Wipes menu.
b) Return to Image.
c) Press WIPE STENCIL button.
d) Random dots will appear on the stencil plane: if USE STENCIL is on, and STENCIL SOURCE menu is selected as Internal or Under/over, then the stencil selections made in the STENCIL CONTROL menu will appear in parts of the screen.
e) Press STOP to terminate the process.

NOTE: This wipe will continue until the STOP button is pressed, preventing other drawing functions.

COLOUR CONTROL MENU



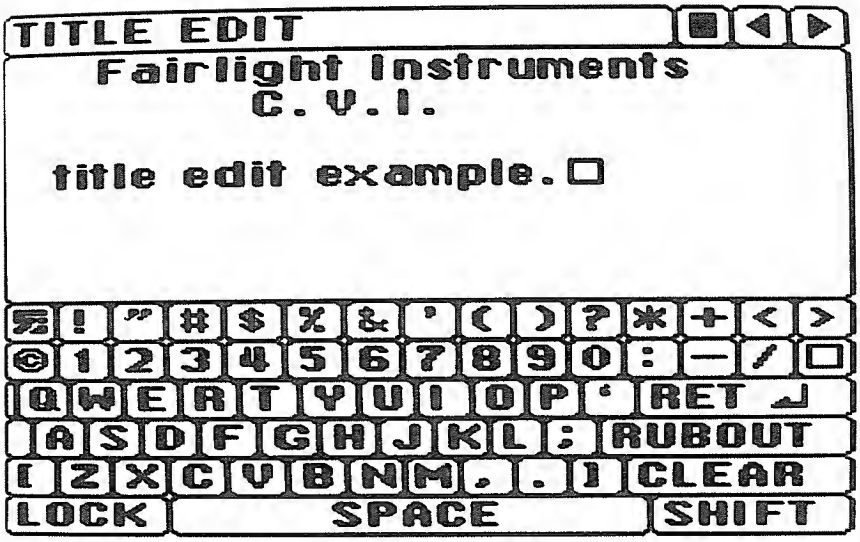
COLOUR CONTROL determines what controls the colour that you draw with or use for COLOUR WIPES.

0) **HUE,SAT,VALUE:** The standard selection for COLOUR CONTROL. The colours you use and see are controlled by the H.S.V. slider controls in the normal fashion.

1) **MUSIC:** Colour is controlled by music (microphone or line input).

2) **RANDOM:** Colour is controlled by an internal fluctuating program.

NOTE: The H.S.V. controls will have no effect if altered while either **MUSIC** or **RANDOM** are selected in this menu.



This menu allows titling, with up to 7 lines of text, with both upper and lower case. It features a "QWERTY" alpha-numeric keyboard layout on screen.

Select characters from the on-screen keyboard by moving the cursor over the desired character and lifting the pen. The character will appear in the large box above the 'keyboard'.

Text will appear in lower case unless SHIFT (or SHIFT LOCK) is selected prior to character choice.

- if SHIFT is on, the first character chosen will be in upper case, and subsequent characters will be in lower case.
- if LOCK is on, all subsequent characters will remain in upper case, until LOCK is turned off again.

Some other functions are:

SPACE BAR - Inserts a space in the text.
RUBOUT - Deletes the last character (including carriage returns).
RET - Returns 'carriage' to beginning of the next line.
CLEAR - Erases all the edited message so you may edit another title.

Procedure:

a) Create the text using the TITLE EDIT menu.
b) To implement your edited message on your working image: Return to image (press STOP button).
c) Press the TITLE button.

d) Move the TITLE➡cursor by use of the pen and graphics pad to the desired title position. You may adjust the H.S.V. controls to change the colour of the text: the cursor will show the colour selected.
e) The TITLE will appear on the image when and where you lift the pen.

NOTE

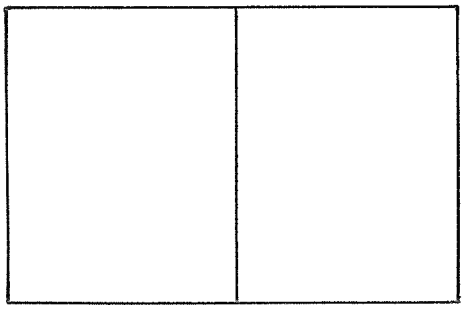
1) The DRAW COLOUR button must be on for the title to appear on the colour planes. THe DRAW STENCIL button likewise controls whether the title is written to the stencil plane. A title can be written to both planes simultaneously. If neither button is on, the title will not appear.
2) As the title is written to the digital field store, if the field store is not being displayed the title will not be seen. This can happen if a VIDEO, LIVE DIGITAL, or CASCADE selection (STENCIL CONTROL menu) is current over the whole screen. Titles can be displayed over live video (analog or digital) by writing the title to the stencil plane as well as the colour planes and making appropriate selections. See the PRESETS section for more information.

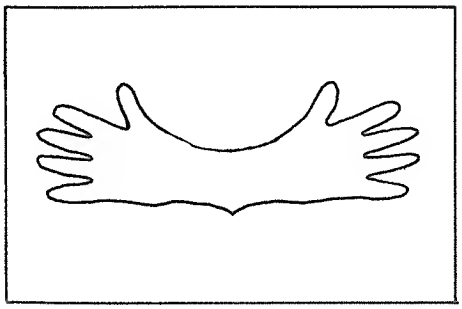
SYMMETRY MENU

This menu enables you to specify symmetries for use with the drawing facilities. These symmetries are generated as the line is drawn to the screen, in that every point drawn will simultaneously appear in the relevant rotations or reflections. The axis of reflection or centre of rotation is always at centre screen, irrespective of pan position. This enables you to create an image with multiple centres of rotation/reflection, by panning the image so that a new point is at centre screen. The SYMMETRY menu does not apply to real-time images: for live symmetries see Vertical and Horizontal mirror in the SCREEN CONTROL menu.

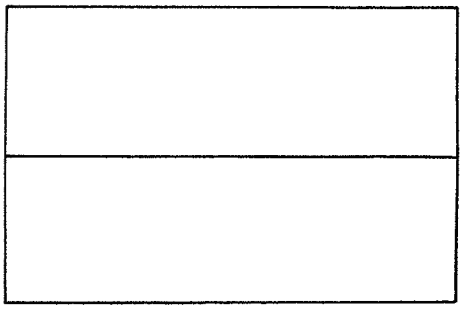
0) **OFF:** No symmetry axis used - draws directly at the pen position. This is the normal selection.

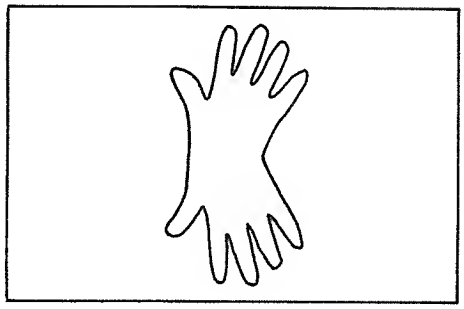
1) **HORIZONTAL:** Reflection in a vertical 'mirror', creating two images as one is drawn.



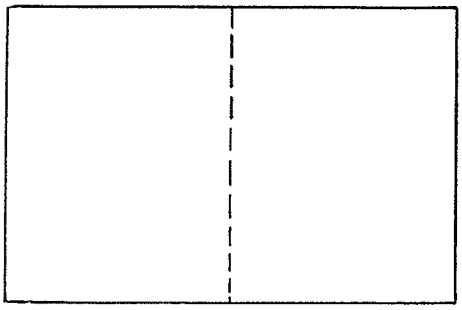


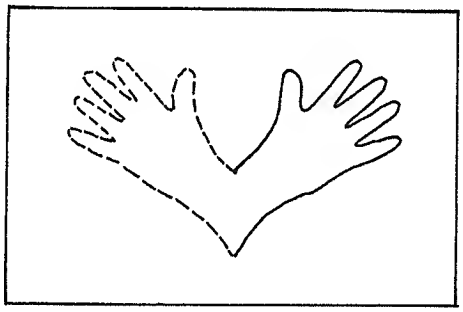
2) **VERTICAL:** Reflection in a horizontal 'mirror', creating two images as one is drawn.



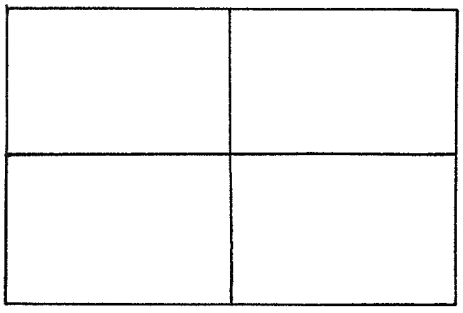


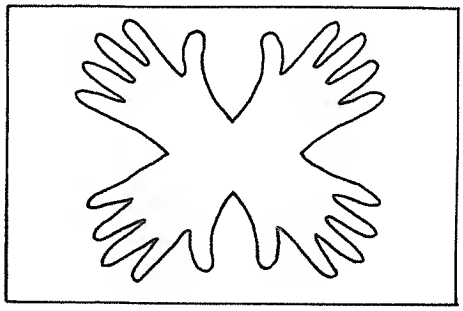
3) **FLIP:** Reversal around the vertical centre line. Note that the original line position is not drawn, only the 'reflected' line. This can make it a little confusing to draw with. This selection is more applicable to the CUT & PASTE Paint Method, and the COPY Colour Wipe, giving a single reversed copy.



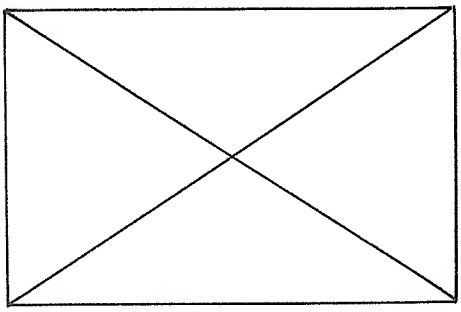


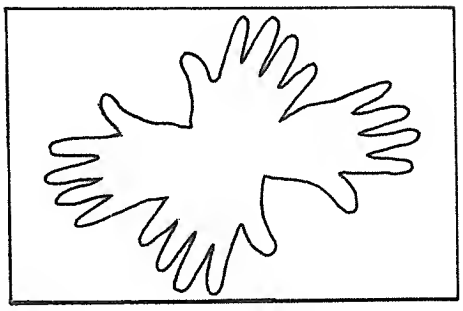
4) **CROSS:** A combination of horizontal and vertical reflections, giving four images as one is drawn.



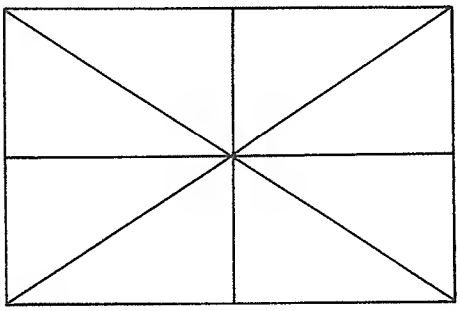


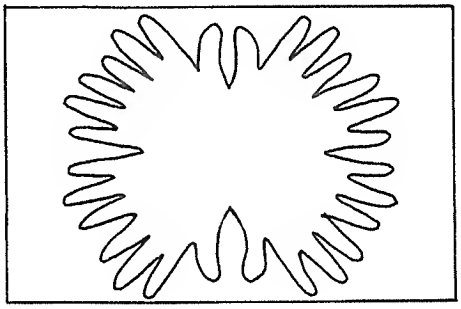
5) **DIAGONAL:** Reflection in both screen diagonals, giving four images, with a diagonal skew.



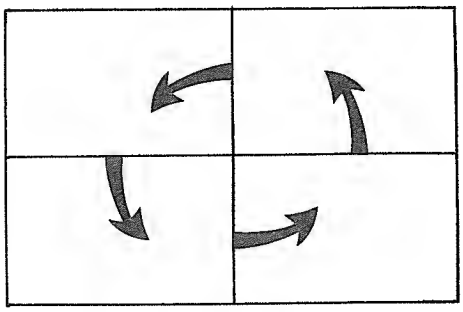


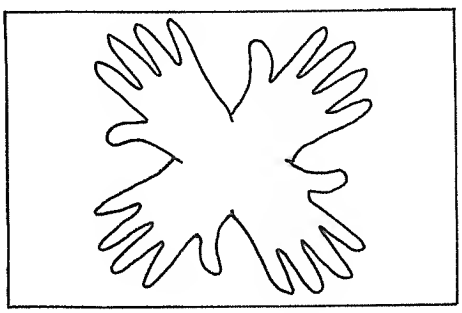
6) **KALEIDOSCOPE:** A combination of cross and diagonal symmetries, giving a total of eight copies of each drawn point. Note that this symmetry in particular may be very slow, especially when used with large brush shapes.



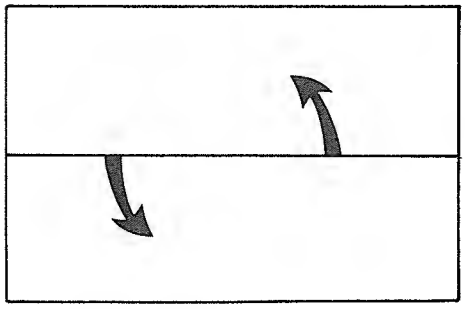


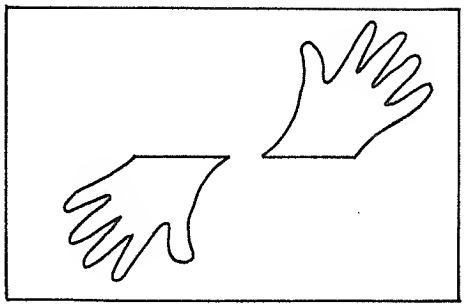
7) **ROTARY:** 90 degree rotation around the current screen centre, giving four images.



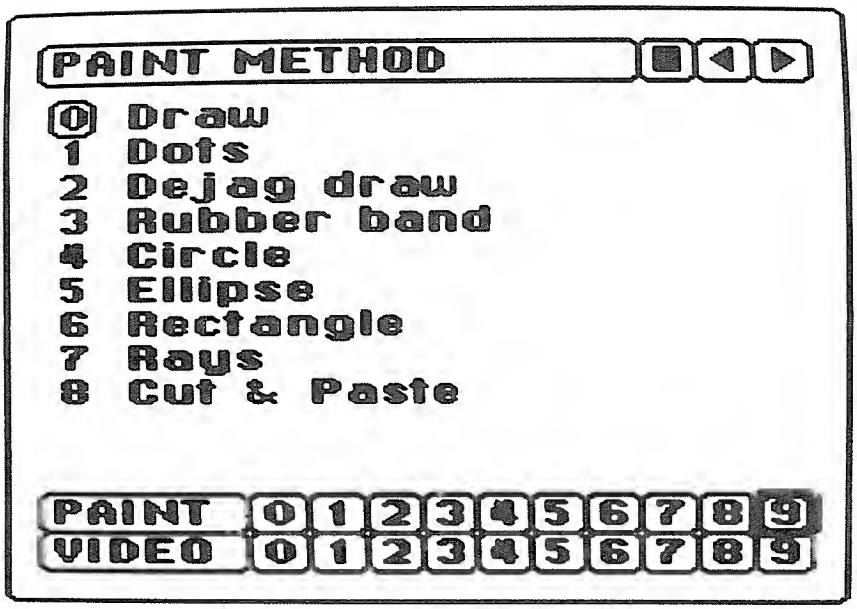


8) **SPIN:** 180 degree rotation around the current screen centre, giving two images.





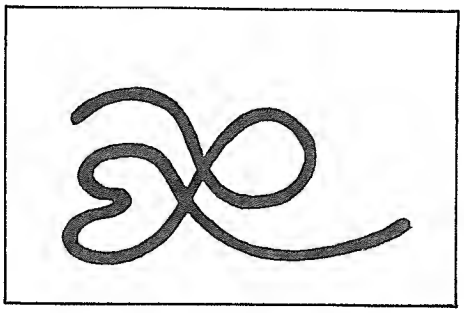
PAINT METHOD MENU



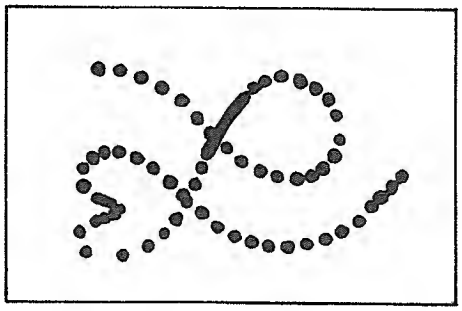
This menu controls the way in which the movement of the pen on the graphics pad results in lines or forms on the screen. The DRAW COLOUR button must be on if you wish to draw on the image plane, and the DRAW STENCIL must be on to draw the stencil. Both DRAW COLOUR and DRAW STENCIL may be on. COLOUR TYPE, BRUSH SHAPE, PAINT TYPE, COLOUR CONTROL, and SYMMETRY menu selections will all affect the drawing process.

If the USE TEXTURE button is on, then the TEXTURES menu also has an effect.

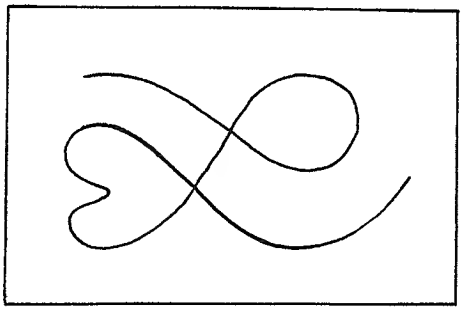
0) **DRAW:** A line will follow the pen around on screen, in the BRUSH SHAPE selected. If the DRAW or DRAW LOCK buttons are not active, a cursor in the current brush shape and colour will appear instead. This allows you to position the cursor before drawing, then to draw the line by pressing the DRAW (or DRAW LOCK) button.



1) **DOTS:** The image of the brush shape will be shown as a single image on the screen at the point which corresponds to the pen position on the pad. If both DRAW and DRAW LOCK is off, a cursor will appear instead, allowing accurate positioning of a brush shape. If the pen is moved quickly you achieve a series of unconnected brush shapes, if moved slowly you achieve a build up of the brush shape areas. This can be very effective with TRANSLUCENT or TINT colour types with a low COLOUR DEPTH (or low VALUE for TINT) as a slowly drawn line will 'pool' colour.



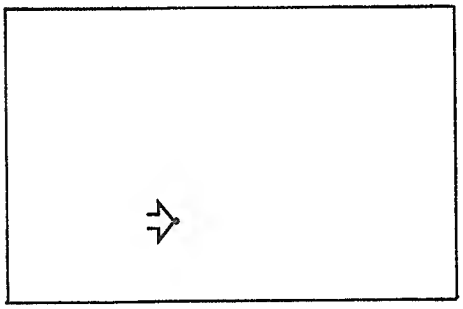
2) **DEJAG DRAW:** This selection is identical to the DRAW selection except that it is 'dejagged' or 'anti-aliased'. This provides a line which is finer than usual, but is considerably slower. Best used with the smaller brush shapes, or where optimum results on a still image are of prime importance.



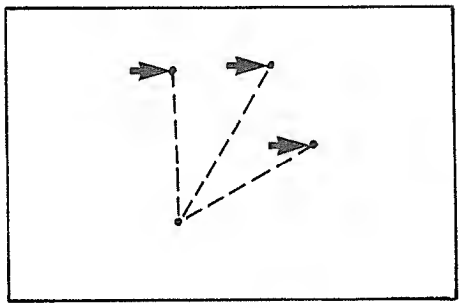
3) **RUBBER BAND:** Provides an accurate control over the drawing and position of straight lines.

METHOD:

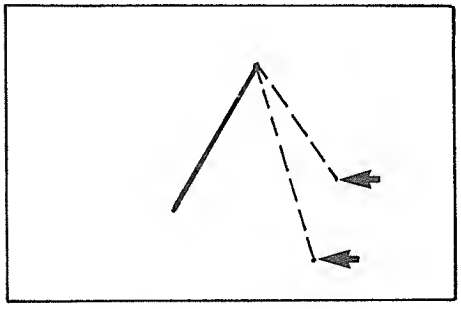
a) Select RUBBER BAND from Paint Method menu.
b) Return to Image.
c) Put the pen to the pad. A cursor in the current BRUSH SHAPE will appear on the screen. Move the arrow tip to the beginning of the lines that you wish to draw, and lift the pen. This defines the start of a series of lines.
d) Put pen to pad again.
e) A single pixel-width line will appear to define the line. This will follow the pen movements around the screen, going from the last defined point to the current pen position.
f) Lift the pen: The line will be drawn in your paint selections.
Steps d) to f) may be repeated as often as desired. If you press STOP, or turn off DRAW/DRAW LOCK, you will return to step c), defining a new starting point.



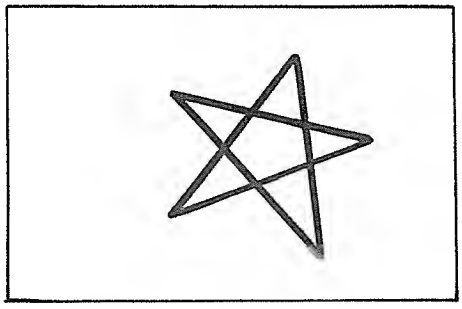
Define starting point.
Lift Pen.



Line follows
Pen position.



Lift pen: line is drawn.
Line follows pen again.

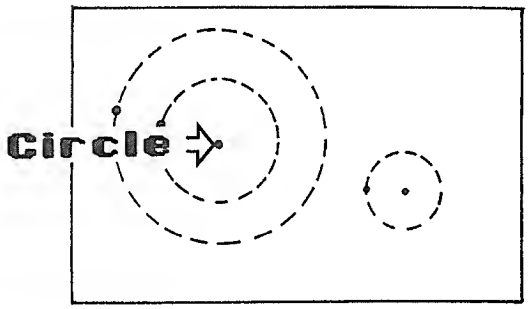


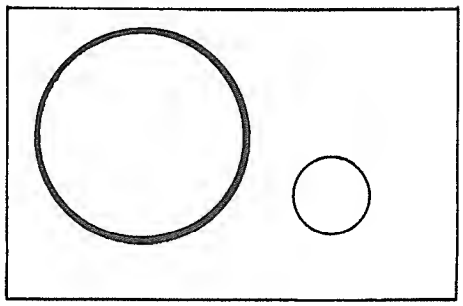
Final result:
Accurately positioned lines.

4) **CIRCLE:** For drawing circles on the screen - the circle is drawn with brush shape and textures and any other selections made.

TO DRAW A CIRCLE:

a) Select CIRCLE from Paint Method menu.
b) Return to Image.
c) Put the pen to the pad. A cursor saying CIRCLE ➔ will appear on the screen. Move the arrow tip to the centre of the circle that you wish to draw, and lift the pen.
d) Put pen to pad again.
e) A series of dots will appear to define the circle. Move the pen to define the correct radius, and the circle of dots will follow the pen.
f) Lift the pen: A circle will be drawn in your paint selections. Steps c) to f) may be repeated as often as desired. If you press STOP, or turn off DRAW/DRAW LOCK, before step f) the circle will not be drawn.

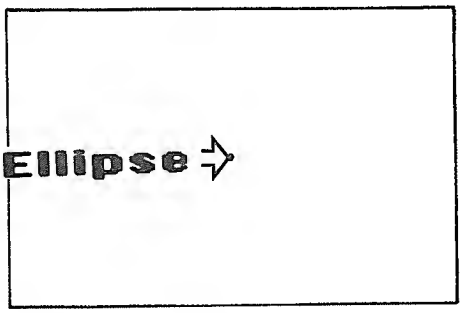




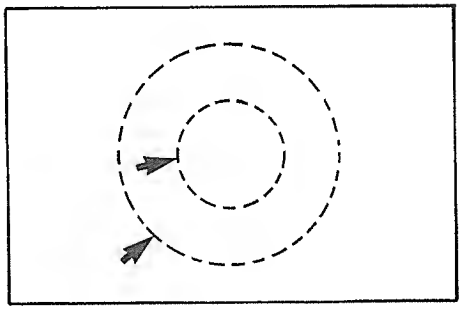
5) **ELLIPSE:** For drawing ellipses on the screen - the ellipse is drawn with brush shape and textures and any other selections made. You may define the ellipse as being narrow, wide, short, long, or anywhere in-between, with any orientation and size.

TO DRAW AN ELLIPSE:

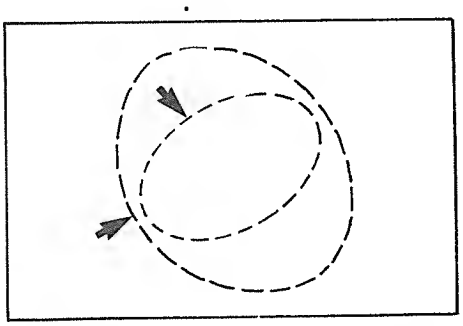
a) Select ELLIPSE from Paint Method menu.
b) Return to Image.
c) Put the pen to the pad. A cursor saying ELLIPSE➡will appear on the screen. Move the arrow tip to the centre of the ellipse that you wish to draw, and lift the pen.
d) Put pen to pad again.
e) A series of dots will appear, defining a circle. Move the pen to the define the radius, such that the circle will fit just inside (or around) the desired ellipse. Lift the pen.
f) Put pen to pad again, and an ellipse of dots will appear on screen, and will follow the pen movements on the pad. The current pen position will stretch or squash the previously defined circle into an ellipse with any desired orientation and ratio of major to minor diameters.
g) Lift the pen: An ellipse will be drawn in your paint selections. Steps c) to g) may be repeated as often as desired. If you press STOP, or turn off DRAW/DRAW LOCK, before step g), the ellipse will not be drawn.



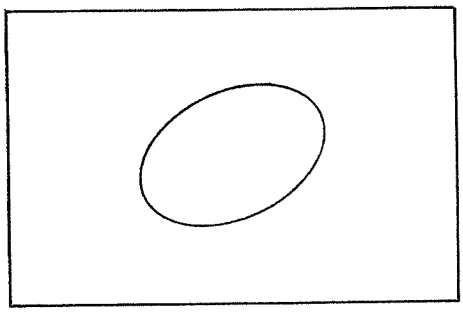
Define centre position.
Lift Pen.



Define circle: arrow marks
Pen position. Lift Pen.



Modify circle into ellipse.
Lift Pen.

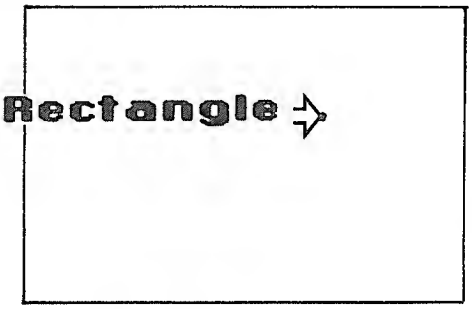


Final ellipse.

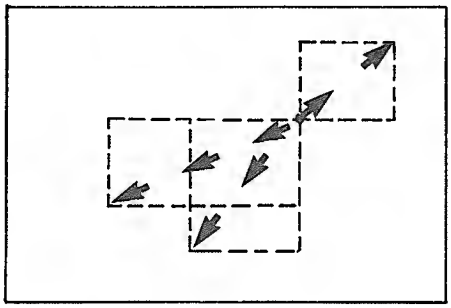
6) **RECTANGLE:** For drawing rectangles on the screen - the rectangle is drawn with brush shape and textures and any other selections made. It can be of any aspect ratio and size, but must be aligned horizontally and vertically. Use the RUBBER BAND selection to draw non-aligned rectangles.

TO DRAW A RECTANGLE:

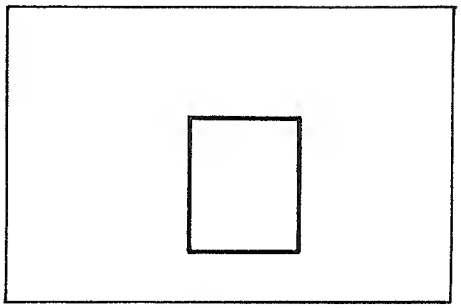
a) Select RECTANGLE from Paint Method menu.
b) Return to Image.
c) Put the pen to the pad. A cursor saying RECTANGLE➔ will appear on the screen. Move the arrow tip to any corner of the rectangle that you wish to draw, and lift the pen.
d) Put pen to pad again.
e) A series of dots will appear to define the rectangle. Move the pen to define the opposite corner of the rectangle.
f) Lift the pen: A rectangle will be drawn in your paint selections. Steps c) to f) may be repeated as often as desired. If you press STOP, or turn off DRAW/DRAW LOCK, before step f) the rectangle will not be drawn.



Define position of corner.



Define position of opposite corner.

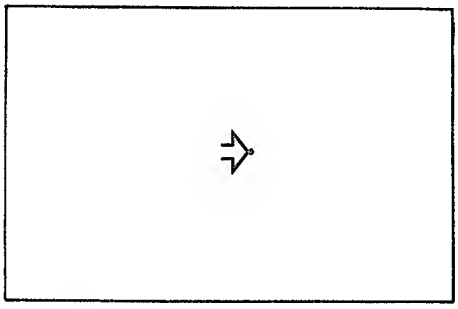


Lift Pen. Rectangle is drawn.

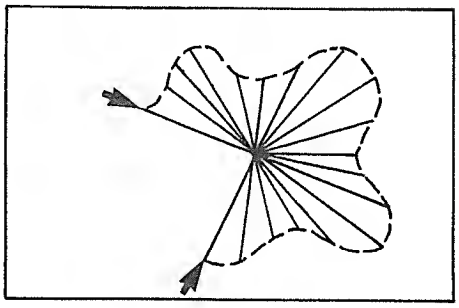
7) **RAYS:** For drawing lines radiating from a point. The rays are drawn with brush shape and textures and any other selections made.

METHOD:

a) Select RAYS from Paint Method menu.
b) Return to Image.
c) Turn off DRAW/DRAW LOCK.
d) Put the pen to the pad. A cursor of the current BRUSH SHAPE will appear on the screen. Move the cursor to the centre of the rays that you wish to draw.
e) Press DRAW (or DRAW LOCK).
f) A series of lines will appear joining the rays centre with the current pen position. Steps c) to f) may be repeated to create rays with different centres. Changes in H.S.V. and COLOUR DEPTH controls while drawing rays will change the ray colour.



Define centre of rays.



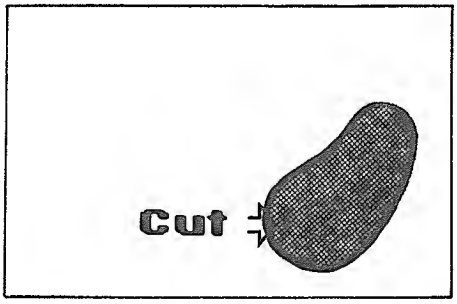
Rays follow pen.

8) **CUT & PASTE:** Enables you to "pick up" an area defined by the stencil plane and copy that area again somewhere else on the screen. You may have more than one area defined, but the copy function of CUT & PASTE will only operate on the area that you specifically define with the cursor.

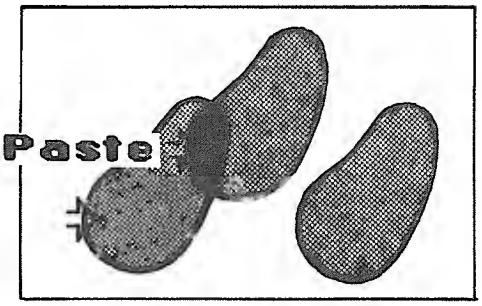
METHOD:

a) Pre-define your stencil (see STENCIL in the PAINT FACILITIES section).
b) Select CUT & PASTE from Paint Method menu.
c) Return to Image.
d) Put pen to pad, a cursor saying CUT➡will appear.
e) Position arrow tip within the area you wish to "cut out".
f) Lift pen.
g) Pen to Pad. The cursor saying PASTE ➡ will appear.
h) Move tip of arrow to desired position. The stencilled area will be copied to the position that you lift the pen. Steps g) and h) may be repeated until STOP is pressed, or you turn off DRAW/DRAW LOCK, in which case the CVI returns to step d), and allows the definition of another area for copying.

You may repeat this process as many times as you want to create multiple images of the stencilled area, with a result similar to collage, or photomontage if frozen images are being copied.



Specify stencil area to be Cut. Lift Pen.



Paste in new position. Lift pen. Repeat.

The VIDEO MENUS is a list of the available menus in the live video control category. These menus can be selected by the means outlined in the 'MENUS IN GENERAL' section.

0) **COLOURIZE TYPE:** Defines how the colours of the digitized or drawn areas will appear on the screen.

1) **STENCIL CONTROL:** Defines what is displayed in regions where the stencil is either ON or OFF.

2) **STENCIL SOURCE:** Defines what source the stencil is coming from i.e. selects what is defining the stencil. This menu also includes VIDEO SOURCE which selects the combination of video input no. 1 and video input no. 2 that is used.

3) **SCREEN CONTROL:** Defines movements and basic changes on the screen, including mirrors, wipes, stencil inversion (shatter), and pan and zoom.

4) **FREEZE CONTROL:** Controls the picture freeze facility.

5) **COLOURIZE CONTROL:** Determines what is controlling the colour for colourizing. Very similar in concept to the COLOUR CONTROL menu, except that instead of controlling the colour for paint/draw- this menu controls the colour for real-time colourizing.

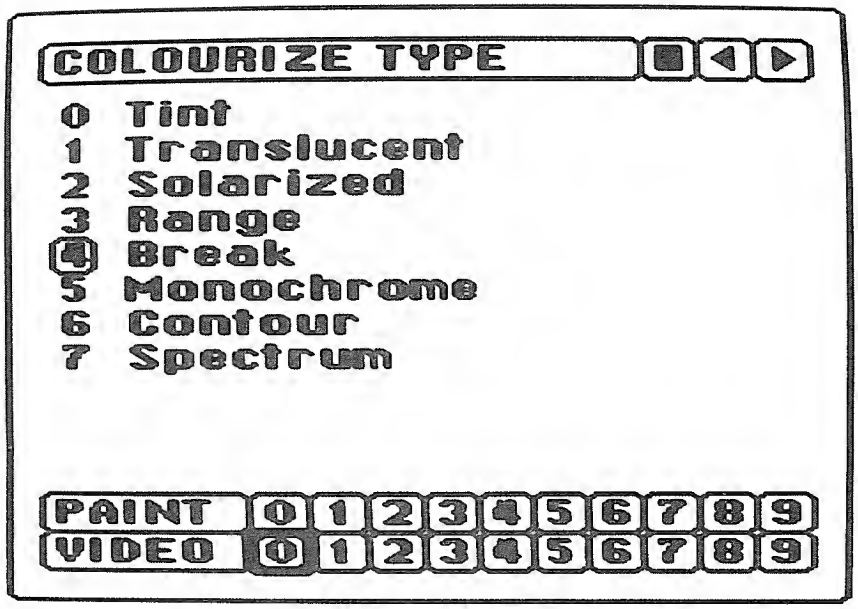
6) **PRESETS CONTROL:** Allows the setting, resetting, control and display of presets.

7) **SEQUENCER:** Controls the sequencing of actions: the recording, editing and replay of control actions (including preset changes, menu selections, drawing functions, and controls changes) so that a series of events may be controlled, refined, and reproduced at will.

8) **SAVE & RECALL:** Controls the digital storage and retrieval of the information onto video tape or video cassette.

9) **SETUP:** Allows the setup of chroma key parameters as well as external monitors. It contains test patterns and colour bars, as well as RS232C port setup. Covers test and setup functions.

COLOURIZE TYPE MENU



This menu defines how the colours of the digitized or drawn areas will look on the screen.
The COLOUR DEPTH control will govern the degree to which the colourizing will have effect.

NOTE: If the COLOUR DEPTH control is at zero, the colourizing will have no effect. With the COLOUR DEPTH control moving upwards towards + , there is an increase in effect. With the COLOUR DEPTH control moving downwards towards - , the effect again increases, but is the opposite of the + effect.

As there are over 1,000,000 colourizings available through the use of the COLOURIZE TYPES, it is not possible to provide explicit descriptions of what they look like. Rather, a brief description of how the colour specified with the **hue, saturation** and **value** colour controls interacts with the image colours is provided. Experimentation is the only way to get a good idea of the colourizing capabilities. When you encounter a colourizing that you particularly like, it can be saved as a preset (see SEQUENCER menu) for later use.

NOTE

To implement the selection in the COLOURIZE TYPE menu, press the **COLOURIZE** button.

0) **TINT:** The colour you specify with the H.S.V. controls is added to; or subtracted from, the existing screen colour- depending where the COLOUR DEPTH control is positioned. As

the colour depth is moved increasingly +, the screen colours will be brightened by the specified colour. Moving the colour depth control towards - will darken the image.

1) **TRANSLUCENT:** This colourize type is similar to overlaying the image with a translucent film of variable 'density' and colour. The degree of translucency is determined by the COLOUR DEPTH control. This can vary from fully transparent (colour depth = 0) to opaque, where only the one colour will be visible (colour depth = fully - or +)
If the COLOUR DEPTH control is - , the 'overlaying film' will be in the opposite or negative of the colour you specify with the H.S.V. controls.

2) **SOLARIZE:** This colourize type is related to TINT, in that the specified colour is added to, or subtracted from the image, to the degree specified by the COLOUR DEPTH control. The difference is that if the brightness of any colour component exceeds the maximum (whiter than white, or redder than red, etc.) a colour 'discontinuity' will occur, creating visual contours on the screen.

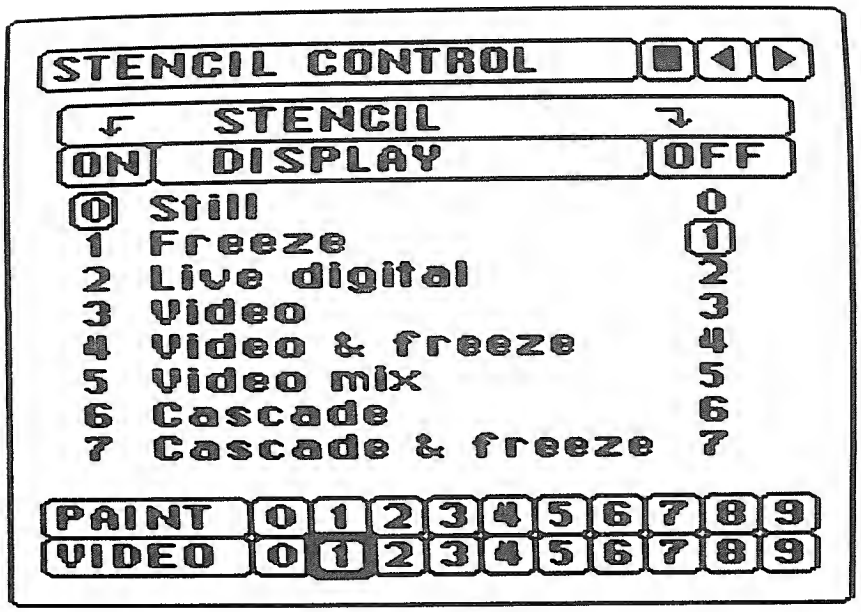
3) **RANGE:** The red, green and blue components of the image will be 'scaled' to the colour selected with the hue, saturation and value controls. Thus the specified colour determines the maximum brightness of the component colours of the image. For instance, if the H.S.V. controls are set to red, only the red component of the image will be seen, as the blue and green components are 'scaled' to zero. Moving the COLOUR DEPTH control into the negative region will result in scaling of the negative of the original image.

4) **BREAK:** This colourize type creates perhaps the most dramatic and beautiful, as well as varied, colourizings. Amongst the colourizings available are subtle effects reminiscent of oil on water, bizzarre posterizations, negatives of any combination of the three primaries (RGB) while retaining the others positive, and a wide range of effects similar to photographic solarization.
Several examples of BREAK colourizings are included in the presets, and you may use them as a starting point for experimentation.

5) **MONOCHROME:** The video image will be converted to a monochromatic picture, which is then tinted by the specified colour. If the COLOUR DEPTH is negative, a tinted black-and-white negative will result. For example, if the colour depth is +, and the H.S.V. controls are set to light brown, the result is similar to sepia-toning a black and white photo.

6) **CONTOUR:** This colourize type can generate a range of posterizing effects. At various settings of the hue, saturation and value controls, it will generate a range of colour contours on the screen. Dark colour settings of the colour controls will result in a large number of colour contours, closely spaced. Brighter colours will reduce the number of contours, but make them more dramatic. Again, it is best to find out what this colourize type does by experimentation.

7) **SPECTRUM:** This colourize type changes the intensity information in the original video image into the hue of the final picture. The H.S.V. controls change from their normal function. The HUE control 'rotates' the result around the 'colour wheel' (Red, Yellow, Green, Cyan, Blue, Magenta, Red). The SATURATION control affects the saturation of the final image (i.e. it whitens the image if down from maximum). The VALUE control affects the range of colours on the screen, and the COLOUR DEPTH control allows intermediate colourizings between the full effect, and the normal image.



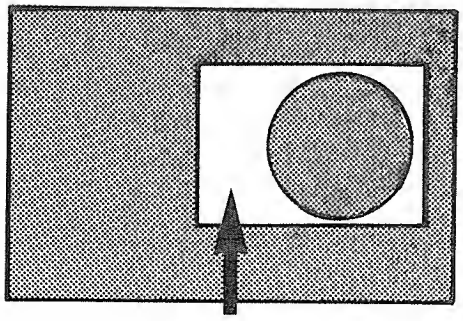
Probably the first thing to notice about this menu is that it has a different format than any of the others. This menu is probably a little harder to understand than other menus. So, don't be discouraged if you find the concepts here take some time to grasp, as this menu is the most powerful menu for creating live video effects.

This menu controls what aspects of video are displayed in all of the areas where stencils are ON; and all of the areas where stencils are OFF.

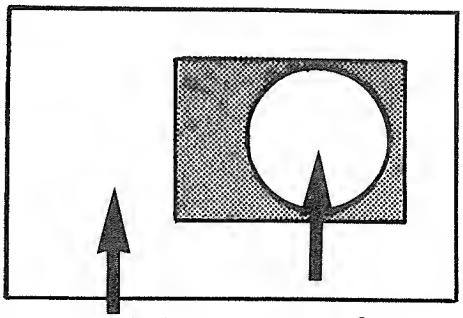
The menu consists of a descending list of the 8 display selections. On either side of this list are descending numerical columns that correspond directly to the selections. The left hand side column may have one selection on at any one time and selects the type of display which will appear in the regions where the STENCIL is ON. The right hand column may also have only one selection on at any one time, and selects the type of display which will be appear in the regions where the STENCIL is OFF.

Whether the stencil is OFF or ON can be determined by enabling the SHOW STENCIL selection in the SYSTEM menu (the bottom half of the COLOURIZE CONTROL menu). When you return to the image, areas where the stencil is ON will be displayed brighter. Areas where the stencil is OFF will appear normal. The STENCIL ON column in this menu always relates to this brightened area.

Note that the stencil ON and stencil OFF regions can be reversed simply by pushing the INVERT STENCIL button. As this actually changes the status of the stencil, it is equivalent to swapping the two columns - STENCIL ON and STENCIL OFF - in this menu.



Stencil **ON** area brighter.



Polarities change after pressing INVERT STENCIL.

STENCIL ON REGION (brighter) 'ON' selection displayed

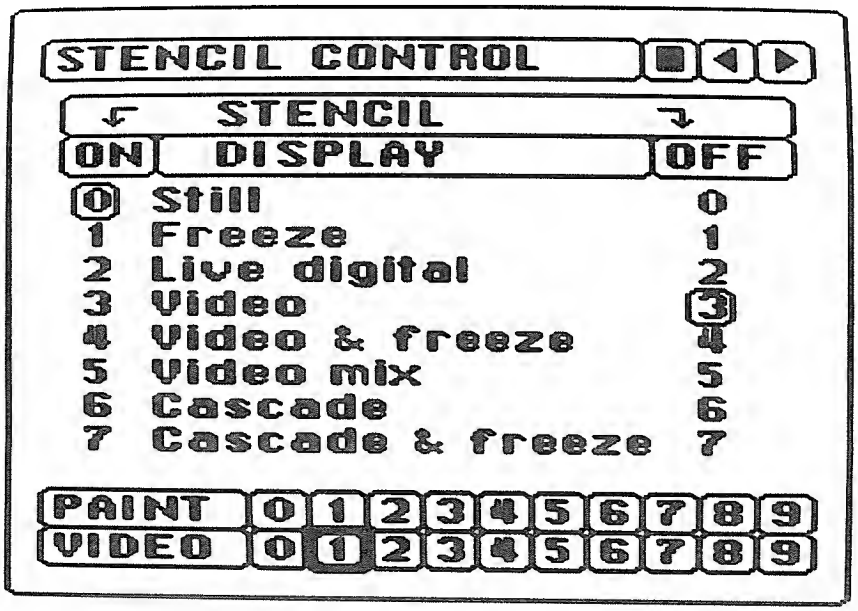
STENCIL OFF REGION (normal) 'OFF' selection displayed

STENCIL CONTROL functions only take notice of what is on the STENCIL PLANE if the **USE STENCIL** button is ON. If this button is OFF, then a selection will appear across the entire screen. This will be the STENCIL OFF selection if the INVERT STENCIL button is off, and will be the STENCIL ON selection if the INVERT STENCIL button is ON.

**** Note that if the same selection is made in both the STENCIL OFF and the STENCIL ON columns, then that selection will appear over the whole screen, irrespective of the condition of the USE STENCIL and INVERT STENCIL buttons.

The layout of the menu allows you to make up to 64 different combinations. Selection is made by the pen.

A typical combination, for example, might be:



This means that wherever the stencil is ON, the contents of the STILL image store will be displayed.

Wherever the stencil is OFF, the contents of the LIVE analog video will be displayed. This particular combination enables you to 'float' a still, stored image over the surface of incoming video.

Not all of these 64 combinations are explicitly covered here, but quite a few are used in the presets, so see the PRESETS section for more information.

0) **STILL:** Whenever STILL is selected as being either ON or OFF, the still contents of the image store will be displayed in the polarity specified (stencil area or it's inverse). The content of the still image will not change, i.e. it will not display live images, and cannot be updated by the FREEZE facility. But you may choose to implement the COLOURIZE TYPE selected, or a COLOUR WIPE, or PAN/ZOOM or STRETCH the digital still.

1) **FREEZE:** When FREEZE display is selected as being either STENCIL ON or STENCIL OFF, the effect is similar to that of STILL (as above), except that it may be updated by the incoming live digital video signal. This is dependent on the current status of the FREEZE CONTROL menu, as well as the FREEZE button. It produces the still, stored image, or the incoming digitized video updated by the FREEZE facility.

For example: If the FREEZE CONTROL menu is selected as being CONTINUOUS; and the FREEZE button is OFF, what will be displayed is the incoming digitized video image - which can be affected by the COLOURIZE, PAN/ZOOM and STRETCH controls. Pressing the FREEZE button will freeze the image.

2) **LIVE DIGITAL:** This is the incoming digitized video signal and it will be affected by COLOURIZING, but it will not be affected by FREEZE. As such it will not affect what is in the digital image store. It is also affected by the PAN/ZOOM or STRETCH controls, and thus will not 'pixelate'.

3) **VIDEO:** This is the live analog video, coming directly from the camera or other video source. It is not digitally processed. Wherever VIDEO display is selected as either STENCIL ON, or STENCIL OFF, the normal image - uncolourized, unzoomed and unaffected by any of the CVI's effects - is displayed in the stencil areas specified.

4) **VIDEO & FREEZE:** The normal analog video input from the camera is displayed (as with selection 3: VIDEO) in either the STENCIL ON or STENCIL OFF polarities, but the video input is able to be frozen. That is, the video signal is being put into the image store under the control of the FREEZE CONTROL menu. This will not be visible unless the stencil area changes in some way. This is because it is the direct video signal that is displayed, and not the still image. But if the stencil area changes - by drawing the stencil; inverting it; wiping it; or the video source image changes while the STENCIL SOURCE is chroma-key or under/over - then the results of the freeze process may be seen.

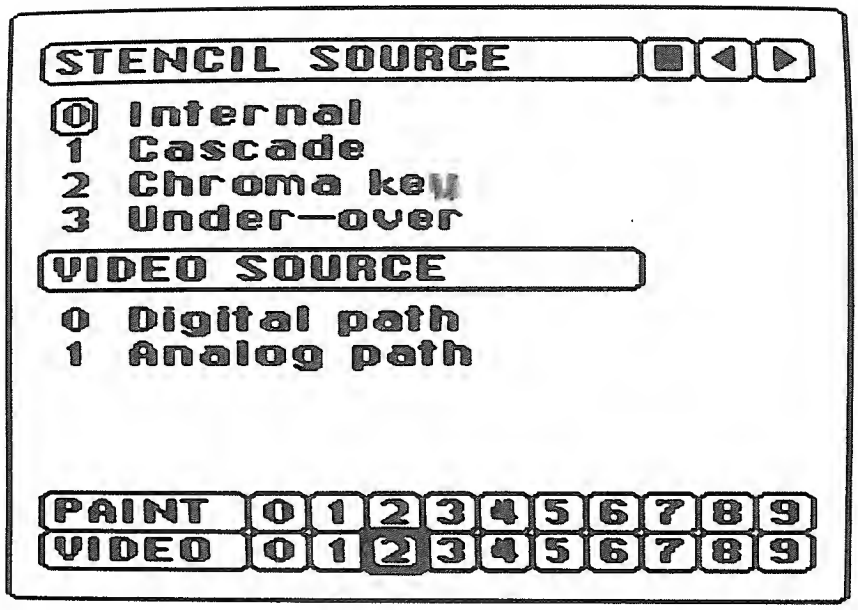
   This selection forms the basis of **trail, overlap mirror,** and **shadow** effects.

5) **VIDEO MIX:** This selection is a double exposure between the live video image, and the contents of the digital image store. As such, it has the characteristics of both the STILL and the VIDEO selections.

6) **CASCADE:** This selection displays the digital cascade information from another CVI connected in CASCADE mode in the stencil regions selected. It will be affected by COLOURIZING, but it will not be affected by FREEZE. As such it will not affect what is in the digital image store. It will not be affected by the PAN/ZOOM or STRETCH controls.

7) **CASCADE & FREEZE:** This selection displays the digital cascade information from another CVI connected in CASCADE mode in the stencil regions selected. This selection allows the digital cascade data from the other CVI to be grabbed or frozen into the image store, under control of the current selection in the FREEZE CONTROL menu, as well as the FREEZE button. It produces the still, stored image, or the incoming **digital cascade** updated by the FREEZE facility.

STENCIL SOURCE MENU



This menu contains two selections in one.

The top half - STENCIL SOURCE - allows you to select the source from which the stencil is derived.
The bottom half - VIDEO SOURCE - selects which of the two inputs (video one or video two) is to be used for digital and analog functions.

STENCIL SOURCE

0) **INTERNAL:** The normal, internally generated stencil - it is the stencil plane that can be drawn on. It bears a fixed spacial relationship to the stored digital image. In other words, there is a pixel to pixel relationship between the stored image and the stencil plane, and if the image is panned or zoomed, the stencil will move with it.

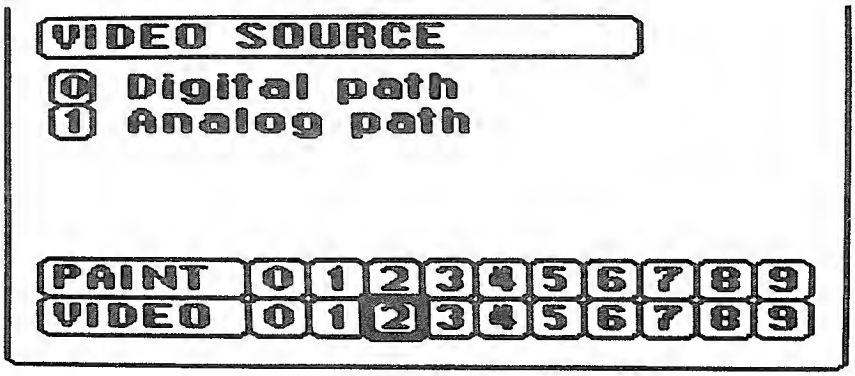
1) **CASCADE:** The stencil coming from a second CVI in CASCADE mode. Instead of using the INTERNAL stencil of the CVI, the stencil output from the second CVI which is plugged into the CASCADE INPUT connector of the first CVI, will be used instead. This selection also enables the external 'key' that may be fed into the STENCIL INPUT to be used.

2) **CHROMA KEY:** This selects a stencil from the internal chroma key mechanism of the CVI. See the PRESETS and the VIDEO FACILITIES sections of this manual for information on the applications of the Chroma key selection. See the SETUP menu section for information on adjusting the CHROMA KEY colour and threshold levels.

3) **UNDER/OVER:** This selection combines the internal and the chroma key stencils so that the STENCIL ON selection (in the STENCIL CONTROL menu) will be displayed on the screen only where both the internal and the chroma key stencils are ON. This allows an external video source to be effectively inserted right into any still image that may be on the picture plane. This gives a three level **multi-plane** effect within the one CVI. This is one of the most powerful features of the CVI.

NOTE: As this selection uses the Chroma key facility, the SETUP menu section should be consulted. Since two stencil sources are combined in UNDER/OVER, the INVERT STENCIL button will invert the combined stencil. If you find that you have drawn the internal stencil in the wrong polarity, it can be inverted in isolation by using the INVERT selection in the STENCIL WIPES menu.

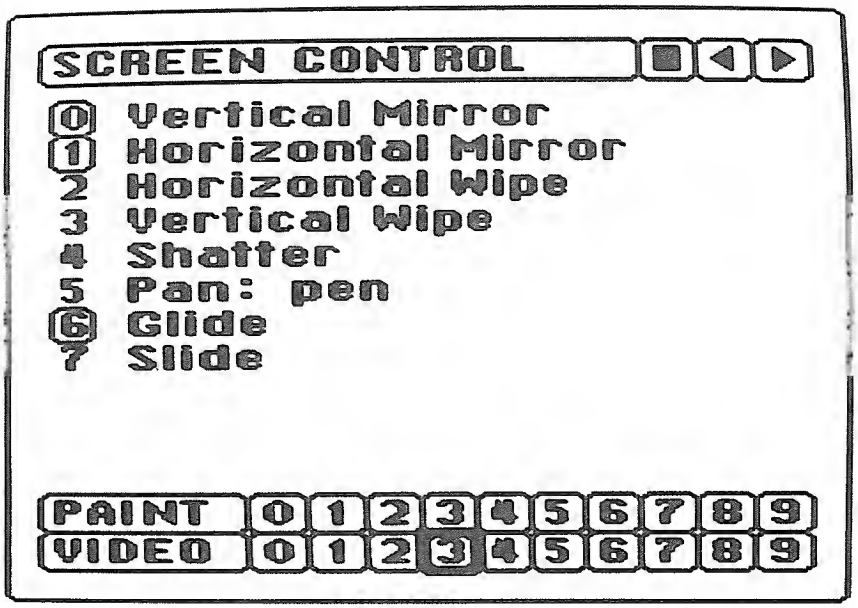
VIDEO SOURCE



This section of the menu selects which of the two video inputs will be used in the two main signal paths of the CVI. If the selection is OFF, the the first video input (Video 1 or RGB 1) will be used. If the selection is ON, Then the second input (Video 2 or RGB 2) will be used for that signal path. Both the DIGITAL PATH and the ANALOG path may be OFF, resulting in Video inputs 1 being used for the whole CVI, or they may both be ON, resulting in the use of Video inputs 2 throughout. If the selections made for the analog and digital paths are different, then the resultant image can be a combination of the two video inputs. Some examples of this appear in PRESETS 84 to 93.

0) **DIGITAL PATH:** This selects which set of video inputs will be used for the digital paths of the CVI. The DIGITAL PATH is digitized, and therefore may be colourized, stored, pixelated, and so on. The digital path also includes the Chroma-key function, so chroma-keying will be based on the input selected for the DIGITAL PATH.

1) **ANALOG PATH:** This selection determines which set of video inputs will be used for the direct analog (un-modified) path in the CVI.



This menu defines movements and basic changes on the screen, including MIRRORS, WIPES and PAN and ZOOM functions.

> In this menu you are able to make more than one selection at a time, enabling any combinations of the eight SCREEN CONTROL functions.

0) **VERTICAL MIRROR:** Enables a vertical mirror on screen at a position controlled by the HORIZONTAL PAN control. It is a reflection around a vertical axis. Live action is mirrored around this axis. The HORIZONTAL PAN control must be away from the minimum position. If you wish to centralize the axis on screen, ensure that the HORIZONTAL PAN control is at midway.

The mirror function will only mirror STILL or FREEZE selections in the STENCIL CONTROL menu. By combining these selections with others which are not mirrored (e.g. VIDEO, LIVE DIGITAL) effects such as overlapping mirrors can be achieved.

A mirror positioned less than half way across the screen (from the left) will result in part of the still stored image being displayed to the right.

1) **HORIZONTAL MIRROR:** Enables a horizontal mirror on screen at a position controlled by the VERTICAL PAN control. It is a reflection around a horizontal axis. The VERTICAL PAN control must be away from the minimum position. If you wish to centralize the axis on screen, ensure that the VERTICAL PAN control is at midway. This function behaves identically to VERTICAL MIRROR, and both may be selected to give QUAD mirror effects.

2) **HORIZONTAL WIPE:** This enables a horizontal wipe between the still, frozen image and a live digital image. The wipe position is controlled by the HORIZONTAL PAN slider. If GLIDE is on in this menu, the wipe speed is controlled by the RATE 1 control.

3) **VERTICAL WIPE:** This enables a vertical wipe between the still, frozen image and a live digital image. The wipe position is controlled by the VERTICAL PAN slider. If GLIDE is on in this menu, the wipe speed is controlled by the RATE 1 control.

4) **SHATTER:** This function is directly equivalent to pressing the INVERT STENCIL button ON and OFF in quick succession, except that it can be much faster than the manual operation of the button. If the RATE-1 control is at maximum, the stencil will be inverted and normalized at every video field. See the PRESETS section for examples of how this control can be used to create effects.
   NOTE: The USE STENCIL button must be ON for SHATTER to work, although a stencil need not necessarily be drawn.

5) **PAN:PEN:** This selection transfers control of HORIZONTAL and VERTICAL PAN from the slider controls, to the touch pad. This enables you to move objects around the screen by drawing on the pad. This is a relative position control, so the image will not suddenly jump to the position that you touch the pad, but will respond to the movements made on the pad. This function can be used in conjunction with GLIDE and SLIDE below, in the same fashion as the PAN control sliders.

6) **GLIDE:** This selection limits the rate or speed that the PAN, ZOOM and STRETCH controls change the image position. It gives a smoother movement. It is controlled by the RATE 1 control.
   If RATE 1 control is on maximum the movement will be very fast.
   If RATE 1 control is on minimum the image will be still.
   If RATE 1 control is up a bit from minimum, the image will shift in the direction specified by the PAN/ZOOM/STRETCH controls - with a very smooth action (one pixel width per field scan). The image comes to rest when it reaches the new position of the HORIZONTAL & VERTICAL PAN controls, or the ZOOM or STRETCH controls; whichever has been changed. It is useful to have this selection on in most circumstances.

7) **SLIDE:** This selection allows continuous, never-ending smooth movement of the image plane. This selection is similar to GLIDE, but changes the position controls to controls of position change rate. Also, it only affects the HORIZONTAL and VERTICAL PAN controls. It will not affect the ZOOM or STRETCH controls, and overrides the GLIDE function on both PAN controls.

NOTE: With SLIDE selected, the function of the HORIZONTAL and VERTICAL PAN controls changes slightly. Instead of relating to the actual position of the image, they control a **rate of change** of position. If the two PAN controls are positioned at midway, the image will remain still. There is a small region, or 'dead spot' around the centre of the slider travel to make it easier to stop the image motion.

If the HORIZONTAL PAN control is above the central position, the image will slide to the right at a speed relative to the position of the HORIZONTAL PAN control. If the HORIZONTAL PAN control is below the central position, the image will slide to the left at a speed relative to the position of the HORIZONTAL PAN control.

In a similar way, the VERTICAL PAN control determines the rate of change of position in an upwards and downwards direction.
If the VERTICAL PAN control is above the central position, the image will slide upwards at a speed relative to the position of the VERTICAL PAN control.
If the VERTICAL PAN control is below the central position, the image will slide downwards at a speed relative to the position of the VERTICAL PAN control.

The slide function has a special non-linear curve, allowing both very slow and very fast slides in any direction. The maximum rate of slide is half the field-store every field. Various 'harmonic' motions are also accounted for. See the PRESETS 61, 62, and 63 for an application of fast slide.

FREEZE CONTROL MENU

This menu determines how the FREEZE control will operate. It works in conjunction with the STENCIL CONTROL menu selections: FREEZE; VIDEO & FREEZE; CASCADE & FREEZE.

NOTE: Other STENCIL CONTROL selections that do not feature the word 'freeze' will not be affected by anything selected in the FREEZE CONTROL menu.

0) **CONTINUOUS:** This means that the digital image will be continuously grabbed into those stencil regions that are selected in the STENCIL CONTROL menu.
For moving images, the FREEZE button should be OFF. If this button is ON, the image will be still.

1) **STROBE:** This selection freezes a single image at a rate controlled by the RATE-2 control.
For example: With RATE-2 near the top, it may be freezing a single video field every fourth field; or at the fastest rate of the RATE-2 control, it will be updating the image store continually (equivalent to CONTINUOUS selection).

NOTE: STROBE can also be stopped by the FREEZE button in the same manner as for CONTINUOUS.

2) **BURST:** When this is selected, it will grab a 'burst ' of images, that is, a sequence of images, lasting for a particular time that is determined by the RATE-2 control, and then it will become still for a particular time, then it will grab another sequential burst of images, then become still, etc...
This selection operates in the same way as in STROBE, except that instead of grabbing a single image, it swaps

between an image updating state and a still image state. Pressing the FREEZE button will make the image still.

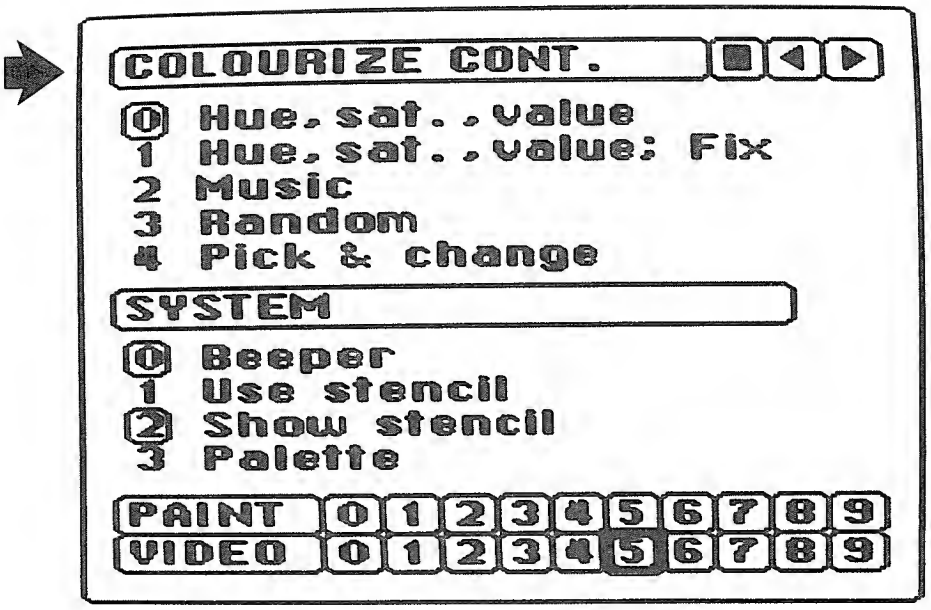
3) **SINGLE FREEZE:** Will acquire a field every time that the FREEZE button is pressed. The normal display will be a still image , but if you press the FREEZE button, the screen display will be updated to the current digital input.

   NOTE: This changes the normal function of the FREEZE button, from a push on/push off control to a single push control.

4) **MUSIC:** This selection enables the freeze function to be controlled (strobed) from an external music input. An image will be acquired into the digital store every time there is a peak in the level of the bass frequencies of the music. So this will continually respond to the music, freezing one image on every musical beat.

5) **EXTERNAL CONTROL:** This enables the freeze function to be controlled by the remote switch input. This is a socket on the back panel of the CVI that can be connected to any switch that will short the input to ground.
   FOR EXAMPLE: A normal video camera trigger switch or a manual switching mechanism may be wired up for external control. If a switch is wired across this socket then the image updating will occur for as long as the switch is ON. When the switch is turned off, the image will freeze.

COLOURIZE CONTROL MENU



This menu is composed of two sections: COLOURIZE CONTROL, and SYSTEM indicator selection.

COLOURIZE CONTROL

This section of the menu determines what is controlling the colours that are used for **COLOURIZING**. It is a similar menu to the COLOUR CONTROL menu, except that instead of controlling the colour for the PAINT/DRAW functions, it controls the COLOURIZE function for live digital input.

> NOTE: This function requires the COLOURIZE button to be ON. Colours will return to normal when the COLOURIZE button is OFF.

0) **HUE, SAT., VALUE:** The first 3 slider controls - HUE, SATURATION & VALUE (as well as COLOUR DEPTH) control the COLOURIZE TYPE selected in the COLOURIZE TYPE menu. This is the normal selection for this menu.

1) **HUE, SAT., VALUE; FIX:** This is similar to H.S.V. (above) except that after you have pressed the COLOURIZE button, if you then turn OFF the COLOURIZE button, the image will remain colourized and not return to normal colours. This enables you to fix a particular colourizing on screen, therefore freeing the HSV controls so that they can be used for determining the palette for PAINT/DRAW functions.

2) **MUSIC:** This selection allows the colourizing to be controlled by the music input. It responds to the bass, mid-range and treble frequency bands of the music input.

3) **RANDOM:** Enables random fluctuations of colour to occur in the colourizing. These fluctuations change at a speed controlled by the RATE-1 control.

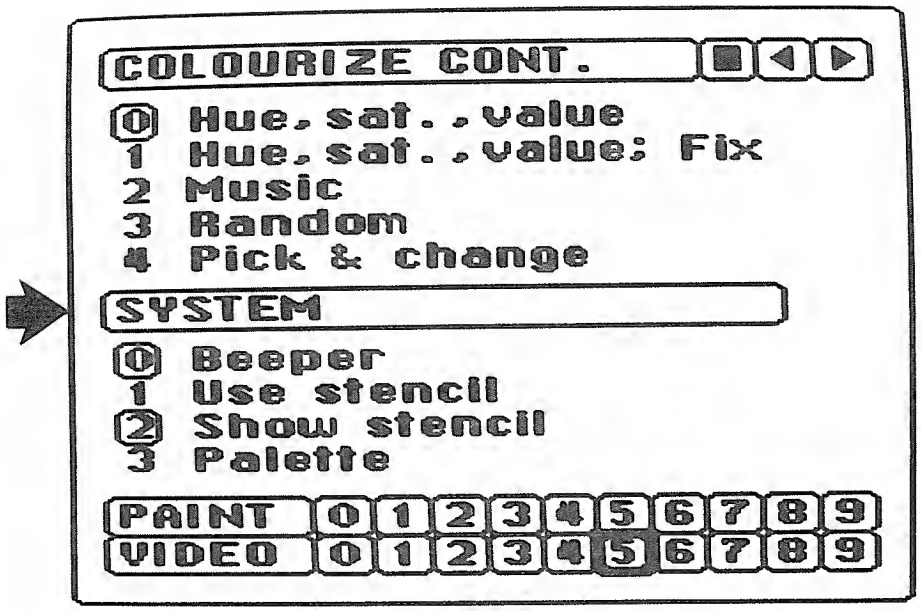
4) **PICK & CHANGE:** When this selection is made it enables an individual colour in the palette to be changed to any other colour. You can 'customize' the palette by changing just one colour, or as many colours as you wish, to any other colours.

TO PICK & CHANGE:

a) Select PICK & CHANGE in the COLOURIZE CONTROL menu.
b) Return to Image.
c) Press the COLOURIZE button.
d) When you put the pen to the graphic pad, a cursor ➔, will appear on screen. Position the cursor arrowtip on desired colour.
e) Lift the pen. The colour you selected will be changed to the new colour specified by the H.S.V. controls and the COLOURIZE TYPE selection.

Steps d) and e) may be repeated to change successive colours.

To revert to normal colourizing you must return to HUE.,SAT.,VALUE selection in COLOURIZE CONTROL and turn off the COLOURIZE button.



This section of the menu enables various of the inbuilt system indicators and controls. These indicators let you see what is happening during the different processes of the CVI. There are 4 selections, and any one or any combination of them may be ON at any time.

0) **BEEPER:** If this selection is on, the CVI's inbuilt BEEPER will sound to signify that a function is complete, or that a cue point has been reached in the sequencer.

1) **USE STENCIL:** This selection controls the use of the STENCIL for PAINT functions. If this selection is on, and if the USE STENCIL button is on, then the INTERNAL STENCIL will be used as a protective 'mask' for drawing. This selection will normally be ON, but in some circumstances it is useful to turn it off. For instance, if you are drawing over the top of live video, then the USE STENCIL, and DRAW STENCIL buttons must be ON. This will result in the colour areas becoming protected as they are drawn, giving a 'drawing under the lines' effect. If this is not desired, simply turn off the USE STENCIL selection here.

2) **SHOW STENCIL:** If this selection is on, then whatever is on the stencil plane will become brighter than the image plane - provided that the DRAW STENCIL button is ON. This indicator should normally be on whenever you wish to draw on the stencil plane, otherwise, it will be difficult to determine what you are drawing. However, there may be circumstances when you require the STENCIL indicator to be OFF, for instance, if you are recording an effect which involves the actual process of stencil drawing.

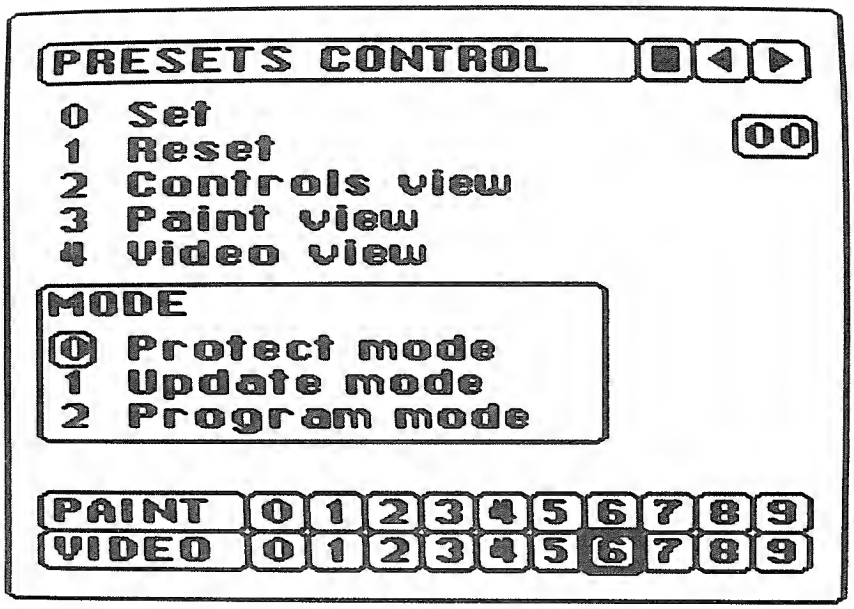
3) **PALETTE:** If this selection is on, a display of the palette of colours that is used for colourizing and paint/draw facilities will appear on screen, when PICK COLOUR is pressed. This allows the picking of a colour directly from the displayed palette, using the usual pen and graphics pad procedure.

> NOTE: This changes the normal function of the PICK COLOUR button, so that instead of picking a colour when pressed, it will display the full palette. This allows you to pick an isolated colour from the full range of 4,096 colours available. It also changes the normal function of the PICK COLOUR button from a momentary contact type button to a push on/ push off type of button.

PROCEDURE:

a) Select PALETTE in INDICATORS menu.
b) Return to the Image.
c) Press PICK COLOUR button to display the palette.
d) Put the pen on the pad. A cursor will appear on the screen.
e) Position the cursor over the desired colour.
f) Lift the pen : the colour will be picked.
g) Return to the image by pressing the PICK COLOUR button again. The colour you selected will be valid until the HSV controls are altered or until another colour from the palette is selected.

PRESETS CONTROL MENU

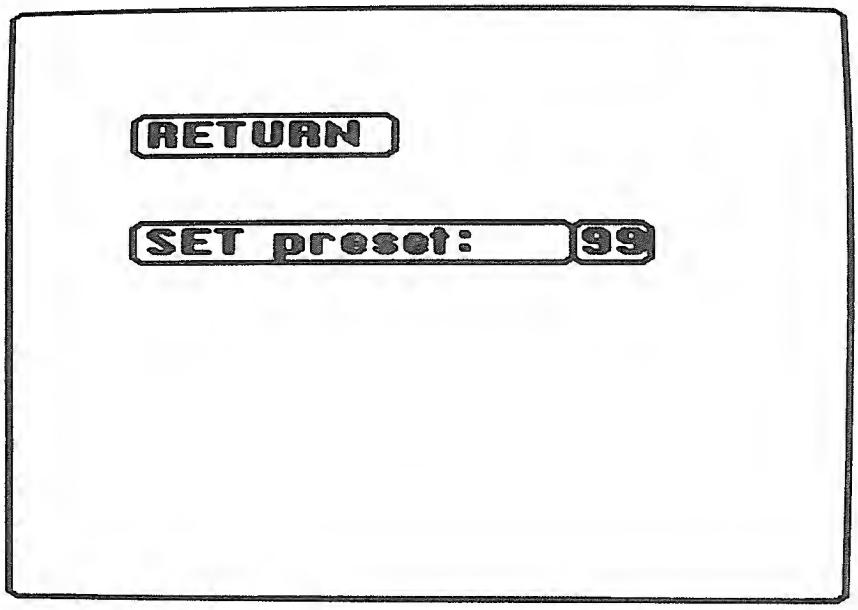


The PRESETS CONTROL menu allows the setup and modification of the CVI's 100 PRESETS. A 'preset' is a copy of the positions of the 10 SLIDER CONTROLS, the 16 PUSH BUTTONS, and most of the MENUS. This menu has three sections. The first group of five items selects a 'sub-menu' for setting, resetting presets, and for viewing the contents of a preset. The second group of items - **MODE** - selects a PRESET modifying mode. The third aspect to this menu is the number in the top right corner of the menu. This is the current PRESET number, and will always be the same as the PRESET NUMBER display on the CVI's control panel.

Selecting presets while in this menu is the same as at other times: press the PRESET button, followed by a two digit number, or the NEXT (draw lock) or PREVIOUS (draw) buttons.

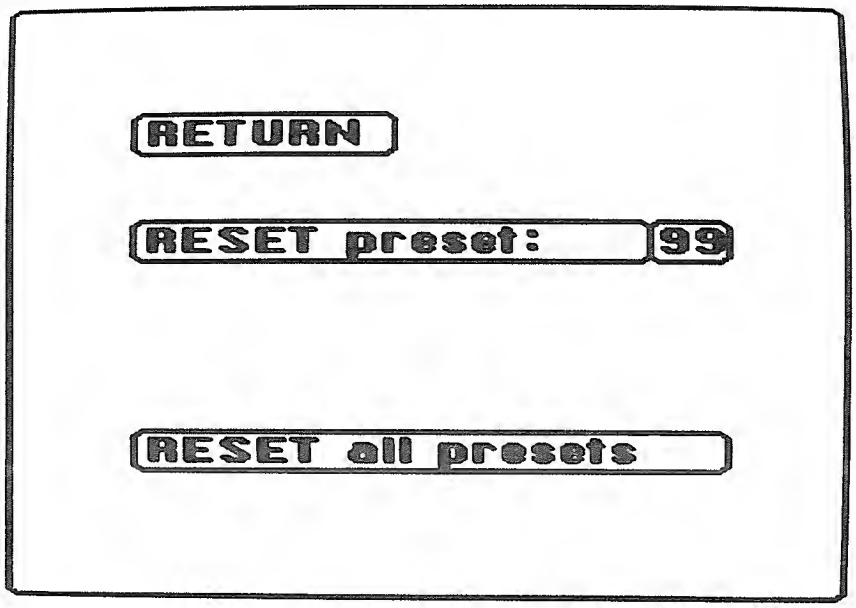
0) **SET:** This selection allows the SETTING of a preset to the current state of the MENUS and CONTROLS. Once a preset has been SET, it will remember the information (MENU selections and CONTROLS positions) until it is changed again. Thereafter, to regain the controls and menus settings SET into a PRESET, simply select that preset in the normal fashion.

To prevent the accidental SETTING of a preset, this function includes a verification stage: selecting SET in this menu will cause a SUB-MENU to appear:



If you wish to SET the preset, select SET PRESET in this sub-menu. If you decide not to, select RETURN.

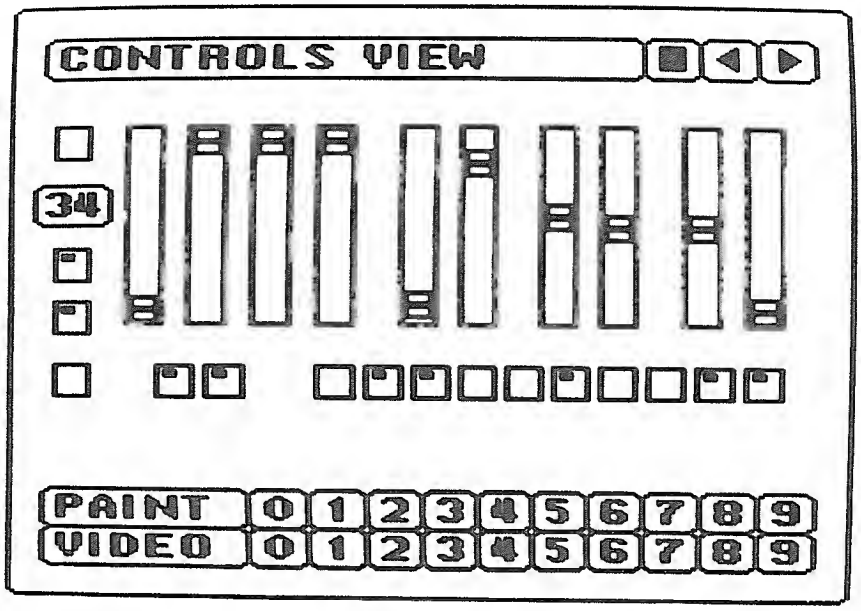
1) **RESET:** This selection allows you to regain the FACTORY PRESETS, which are those shown in the PRESETS QUICK SELECTOR section of this manual. RESETTING a preset will override any changes made to that preset, and replace it with the FACTORY PRESET. This selection also has a verification stage; selecting RESET will cause the following sub-menu to appear:



This sub-menu has three selections. Selecting RETURN will result in no change to the preset. RESET PRESET will RESET only the PRESET indicated by the preset number. RESET ALL PRESETS will revert ALL 100 presets to the factory presets.

NOTE: Selecting RESET ALL PRESETS will cause any presets that you have entered to be over-written. If you wish to regain these presets at a later stage, They should be digitally saved onto video-tape using the SAVE AND RECALL menu, before selecting RESET ALL PRESETS.

2) **CONTROLS VIEW:** This selection allows you to see the value of the 10 SLIDER controls, and the condition of the 16 PUSH-BUTTONS, that is stored in the current PRESET. It also allows these values to be changed. Selecting CONTROLS VIEW will cause the following sub-menu to appear:

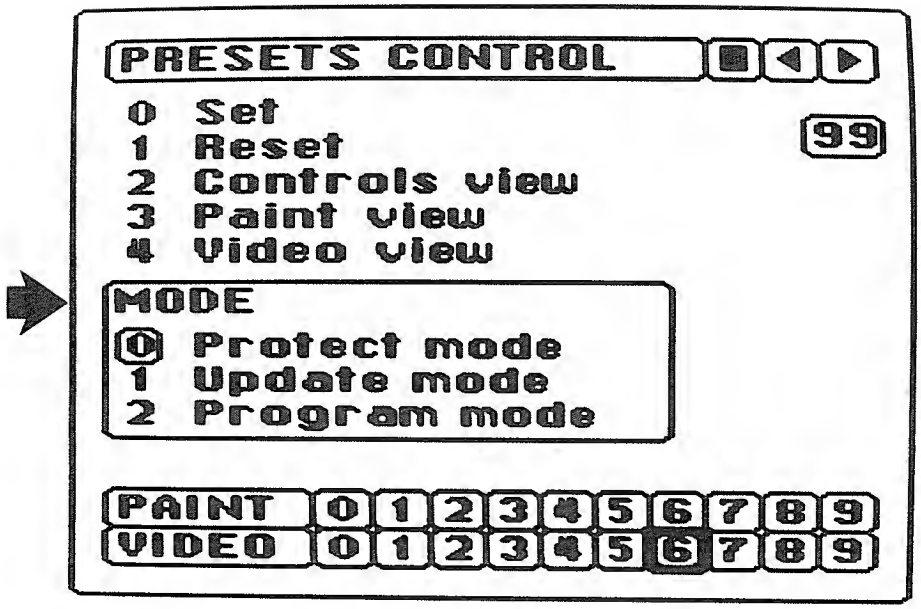


This sub-menu contains a diagram that represents the control panel. The 16 BUTTONS and 10 SLIDERS appear in this diagram in the same relative positions as they are on the CONTROL PANEL. The position of the SLIDER controls is shown, and may be changed by moving the cursor to the desired position and lifting the pen. Likewise, the status of the button function is indicated. This may be changed by moving the cursor over the on-screen button, and lifting the pen.

3) **PAINT VIEW:** This selection will show the overall status of the PAINT menus when it becomes operational.

4) **VIDEO VIEW:** This selection will show the overall status of the VIDEO menus when it becomes operational.

MODE



The lower section of the PRESETS CONTROL menu contains this PRESET MODE selection.

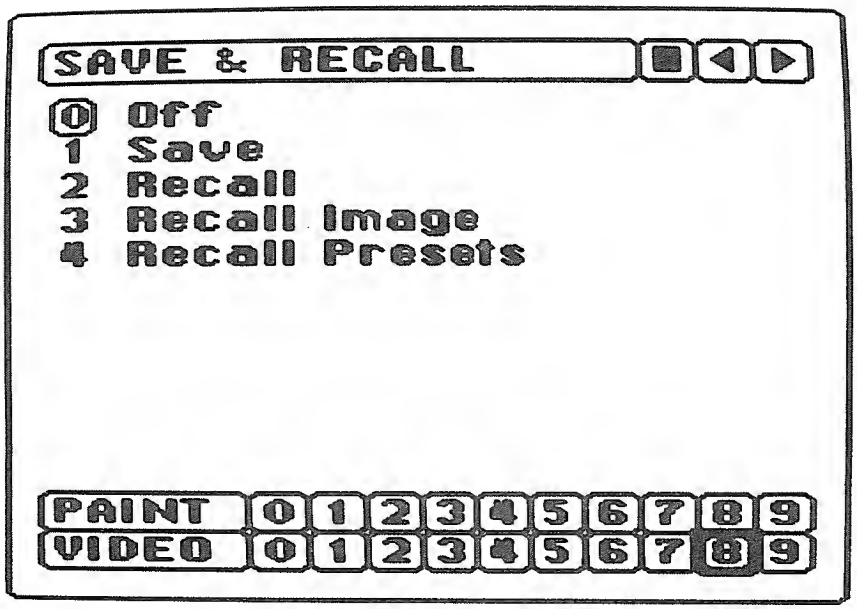
0) **PROTECT MODE:** This is the normal selection for preset mode. If selected, the PRESETS will not be altered except by specific SET or RESET selections in the PRESETS CONTROL menu, or by RECALLING presets in the SAVE AND RECALL menu.

1) **UPDATE MODE:** This selection will cause any changes made to the CONTROLS or MENUS while in a PRESET to be recorded in that preset. Thus, if this selection is made, the presets will be **UPDATED** as they are used. This is useful for modifying existing presets without having to explicitly SET or RESET them. Use this selection with care, and be sure to return to PROTECT MODE when updating is complete, or presets may be altered unintentionally.

2) **PROGRAM MODE:** This selection can be used to generate a series of associated presets. If this selection is made, selecting a new PRESET will NOT result in the stored information in the new preset being used. No change will be apparent when the preset is changed, but the current state of the controls will be stored into the preset that you have just left. This allows the rapid programming of a chain of presets which have differences that follow on from the previous preset. This selection should be used with care, and PRESETS MODE should be returned to PROTECT MODE to prevent the unintentional overwriting of other PRESETS.

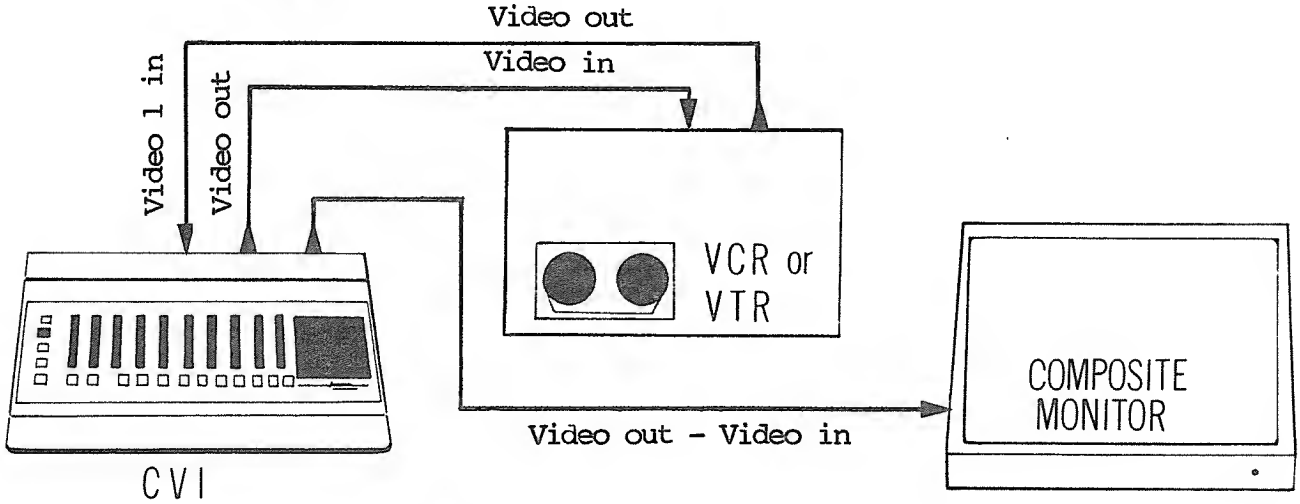
The SEQUENCER will be one of the CVI's most powerful and complex functions, allowing the recording, editing, and replaying of control actions. These actions will include changes to the controls, preset selections, menu selections, and drawing functions. Events may be timed to the nearest field count. The SEQUENCER, along with appropriate documentation, will be provided as a free update when it becomes available.

SAVE AND RECALL MENU



This menu controls the digital storage and retrieval of still images, sequences, and presets onto video tape or video cassette. Any variety of video tape may be used for this purpose: 1/2" VHS or Beta, or 3/4" U-Matic, 1", or otherwise, provided that it can record and replay a colour video signal.

The CVI cannot control your video cassette or tape recorder, so some manual intervention is required. Specifically, you must fast forward or reverse the video recorder to the point on the tape that you wish to record or retrieve the information, and operate the recorder's play and record buttons. The following diagram shows the suggested connection of the CVI and a video recorder for easiest operation:



RECOMMENDED CONNECTION OF CVI AND VIDEO RECORDER

The Save and Recall functions have error correction, and will withstand tape dropouts of up to seven video lines in every field without loss of information.

To use, first make the selection in the SAVE & RECALL menu. Return to the image. The SAVE & RECALL function will be active immediately.

0) **OFF:** If you do not require a SAVE & RECALL function, select OFF.

1) **SAVE:** If this is selected, the analog image coming straight from the VCR (if the output of the VCR is plugged into the CVI) is displayed until the DRAW button is pressed. This enables you to fast forward or rewind the VCR or VTR until you find the place on the tape that you wish to store the information. This function takes approximately one and a half minutes to complete, so at least that duration of tape is required for the full storage of the image.

TO SAVE:

a) Select SAVE in the SAVE & RECALL menu.
b) Return to the image.
c) Rewind or fast forward the tape to find the position that you wish to begin recording.
d) Press record on VCR.
e) Press the DRAW button.
The digital image will be displayed on screen for approximately 5 seconds. This will be recorded in the normal analog manner of the VCR, enabling you to find the image on the tape at a later time by a visual search.
After the 5 seconds of the image display, a series of coloured lines will occur on the screen - this is the digital information being saved onto video tape. This takes about 1 minute to complete and resembles 'video noise'. The digital image will then return to the screen when the SAVE function is completed.
f) Press the stop button on the VCR to stop recording.

2) **RECALL:** The opposite function to SAVE. This selection recalls all of the digital information saved onto the video-tape, and puts it into the CVI's memory. Note that this will overwrite anything that is currently in the CVI. Thus the image, sequencer and presets in the CVI before the RECALL function is initiated, will be lost. However, this information can be seperately SAVED before RECALL if you think you may need it later.

TO RECALL:

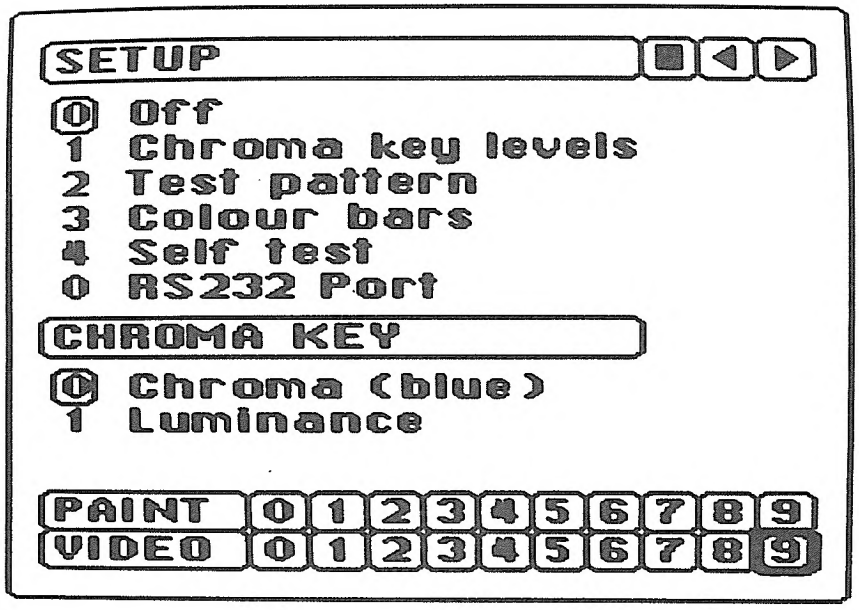
a) Select RECALL in the SAVE & RECALL menu.
b) Return to image.
c) Rewind or fast forward the VCR to locate the image you saved previously with the SAVE function.
d) Press the play button on the VCR.
e) Press the DRAW button.
The CVI will read and analyse the information from the

VCR and will reconstitute the original digital image back onto the screen.

With this RECALL function selected, the image, the stencil, the palette, the sequencer, and the presets will be recalled - overwriting the existing, current image, the stencil, palette, sequencer and presets.

3) **RECALL IMAGE:** Recalls only the image information, and will not affect the sequencer or presets. Thus RECALL IMAGE may be used where a stored digital image is required, but the current sequencer information and presets are to be retained. The procedure is the same as for RECALL.

4) **RECALL PRESETS:** Recalls the 100 user alterable PRESETS, and the SEQUENCER information. This will not affect the current image in the digital store. The proceedure is the same as for RECALL.



This menu contains various functions useful for setting up the CVI with external equipment. If a selection other than OFF is made in this menu, then when you return to your image, (press STOP button or position cursor over the white square) - then the selection you have made will override the normal operation until the STOP button is pressed again.

0) **OFF:** The normal selection during CVI operation.

1) **CHROMA KEY LEVELS:** This enables you to adjust the threshold level of the inbuilt CHROMA KEY circuits with, the H.S.V. controls. Note that it changes the function of the H.S.V. controls to allow fine adjustment of the chroma key levels.
The HUE control = red level
The SATURATION control = green level
The VALUE control = blue level
The COLOUR DEPTH control will have no effect.

The ideal way of adjusting the CHROMA KEY levels is to make these selections:

PROCEDURE:

a) Select CHROMA KEY LEVELS in the SETUP menu.
b) Select CHROMA KEY COLOUR = BLUE (if blue keying is required).
c) Select STENCIL in the INDICATORS menu.
d) Select CHROMA KEY in the STENCIL SOURCE menu.
e) Select VIDEO in the STENCIL CONTROL menu, both in the STENCIL-ON, and STENCIL-OFF columns.

NOTE: SELECTIONS a) TO e) ARE MADE IN **PRESET 99**. THIS PRESET MAY BE SELECTED INSTEAD OF THE ABOVE STEPS.

f) Ensure that the video camera is aimed and focussed on the subject that you wish to chroma key, against a blue background. See the CHROMA KEY LIGHTING appendix.
g) Adjust the CHROMA KEY LEVELS with the HSV controls, so that the stencil display indicator **entirely covers** the blue background, but **leaves uncovered** the person or object in camera focus.
h) When the screen display levels are adjusted correctly, press the STOP button. This will turn off the CHROMA KEY adjustment mode and return you to the normal operational mode of the CVI.

2) **TEST PATTERN:** If this function is selected, and then the STOP button is pressed, an inbuilt TEST PATTERN will appear on the screen. This will destroy the image you may have in the digital image plane. The TEST PATTERN is there to enable the correct setup of external monitors and other video equipment. It is for fine adjustment of external monitors to ensure optimal picture quality.

3) **COLOUR BARS:** If this selection is made, and then the STOP button is pressed, a COLOUR BAR display will appear on the screen. It will not destroy the image you may have on the digital image plane. Press the STOP button again to return to the image.

4) **SELF TEST:** This selection initiates the CVI's self-test function. This tests the majority of the CVI's digital circuitry. Any image on the digital image plane will be lost (i.e. erased) by this test. If the CVI passes the test, the message "Self-test passed" will appear on the screen. If the CVI determines that it is faulty, appropriate messages will appear. See the appendix entitled "What to do if it doesn't work".